STATE OF MINNESOTA DISTRICT COURT

COUNTY OF RAMSEY SECOND JUDICIAL DISTRICT

- -

The State of Minnesota,
by Hubert H. Humphrey, III,
its attorney general,
and
Blue Cross and Blue Shield
of Minnesota,

Plaintiffs,

vs. File No. C1-94-8565

Philip Morris Incorporated, R.J.
Reynolds Tobacco Company, Brown
& Williamson Tobacco Corporation,
B.A.T. Industries P.L.C., Lorillard
Tobacco Company, The American
Tobacco Company, Liggett Group, Inc.,
The Council for Tobacco Research-U.S.A.,
Inc., and The Tobacco Institute, Inc.,

Defendants.

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DEPOSITION OF W. KIP VISCUSI, Ph.D.

Volume I, Pages 1 - 260

(The following is the Deposition of W. KIP VISCUSI, Ph.D., taken pursuant to Notice of Taking Deposition, at the offices of Dorsey & Whitney, Attorneys at Law, 220 South Sixth Street, Minneapolis, Minnesota, on September 17, 1997, commencing at approximately 8:39 o'clock a.m.)

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E X A M I N A T I O N I N D E X

E X H I B I T I N D E X

P R O C E E D I N G S

(Witness sworn.)

W. KIP VISCUSI, Ph.D.,

called as a witness, being first duly sworn, was examined and testified as follows:

ADVERSE EXAMINATION

BY MR. SILBERFELD:

Q. Would you state your full name for the record?

A. W. Kip Viscusi, where W. stands for William.

Q. Dr. Viscusi or Mr. Viscusi, what do you prefer?

A. I'm happy with mister. I'm a Ph.D. but --

Q. What do your students call you?

A. Professor.

Q. Among other things.

A. No, hope not.

Q. Mr. Viscusi, my name is Roman Silberfeld. We met you off the record earlier and, together with my partners and associates, we represent the State of Minnesota and Blue Cross\Blue Shield in an action brought by those entities against the tobacco companies. You understand that?

A. Yes.

Q. We're here today to take your testimony in connection with that case, and we have your expert

report, we'll talk about that in awhile.

You've been deposed on at least three other occasions I'm aware of having to do with tobacco litigation. Do you think any useful purpose would be served by my going over the usual ground rules about deposition procedure?

A. Not unless they're different here than elsewhere.

Q. I doubt that they are. You're under oath, you understand that?

A. Yes.

Q. And even though we're gathered in informal surroundings here, the oath has the same force and effect as if you were testifying in a court of law. You understand that?

A. That's fine.

Q. We're going to be talking about somewhat technical matters about which you are knowledgable and I'm less knowledgable, probably far less knowledgable, so if at any time I ask you a question which doesn't make any sense to you, please don't try to answer that question, instead tell me you don't understand, it won't hurt my feelings, and I'll try to rephrase it. So that at any time you do answer a question we can assume that you understand it; all

right?
A. All right.
Q. When were you first contacted by anyone about being a witness in this case as opposed to other tobacco litigation?
A. I don't know.
Q. Can you give me the year?
A. This year.
Q. And who was it that contacted you about being a witness in this case?
A. Mr. Atkeson.
Q. And at the time you were contacted, had you already agreed to be a witness in other cost-recovery cases brought by states or entities?
A. I'm not aware of the timing, whether he did these as a group asking me to do several states or whether it was one at a time. These were not major events in my life and I know -- I knew at that time I was at least going to be testifying in some states, I didn't know which ones.
Q. Did you have an impression in your mind at that time as to how many states you would be a witness in?
A. A few, so it was just a few states were named, were -- as possibilities. It was not like we have, you know, 40 states or 37 states.

Q. "A few" being more than one, less than 10, something like that?
A. I've never heard mention more than, you know, four states, maybe four, five states.
Q. Which ones?
A. The ones I've done were Texas, Mississippi, Florida and Minnesota, and maybe Massachusetts, but I'm not even sure what the status of what's going on in Massachusetts.
Q. And when you were first contacted by Mr. Atkeson earlier this year about this case, had you previously agreed to be a witness in any cost-recovery cases before that time?
A. Well assuming this contact came afterwards and was not simultaneous, and I don't recall, then it would have been after I'd already agreed, but I don't remember the timing. I don't know which came first in terms of which state was mentioned first.
Q. And when you were contacted by Mr. Atkeson was that by phone or in person?
A. We've had both phone conversations and personal meetings. I don't recall which -- you know, as I say, it wasn't a critical event in any sense.
Q. When you were first contacted by Mr. Atkeson about being a witness in this and perhaps other

cases, did you already know him?

A. I had met him before, yes.

Q. And what was that in connection with, --

A. In connection --

Q. -- the prior meeting?

A. -- with the implications of my research for the litigation.

Q. And when was it that you first met?

A. I was still at Duke, so that was probably a couple years ago.

Q. And when you say it had to do with the implications of your work, what specifically are you thinking of?

A. Well there was just a brief meeting for which I don't think there was much of any follow-up, where they were just interested in more the kinds of things that I'd done on cigarettes.

Q. What did you tell them at that time?

A. Well I explained to them the contents of my published papers.

Q. On what particular subject area?

A. Smoking, the public's risk perceptions of smoking, but primarily on the social cost of smoking.

Q. Would you say that the social cost of smoking was the centerpiece of the discussion and risk

perception and smoking generally were ancillary to the discussion?

A. Yes.

Q. I want to try to understand the -- the sequence of events relative to your study of the public's risk perception about smoking.

There was the 1985 audits and survey data, you recall that, don't you?

A. Yes.

Q. When was it, in point of time, that you first got that?

A. It was in the 1980s, I'm not sure exactly when. It was not right after the survey was run since I was not -- had no contact with them before the survey was run, so it was sometime after that. It was in the 1980s.

Q. And then the -- the sensitivity work that you did relative to the '85 audits and survey data, that was the phone survey in your state, I believe, wasn't it?

A. In North Carolina.

Q. And when was that done, approximately?

A. I don't know. It's in my book, but -- I give the dates in my book.

Q. All right. And was that before 1990 or after?

A. I'd have to look it up. I can look it up.
Q. Do you have the book with you?
A. Yes.
Q. Could you look?
MR. ATKESON: I'm disappointed not to see a copy on your side.
MR. SILBERFELD: I have it, but I just didn't bring it.
MR. ATKESON: That's fair, then.
(Discussion off the stenographic record.)
A. Fall 1990 through spring 1991.
Q. And then as I understand it, the -- a third building block, for lack of a better term, in support of your risk-perception opinions has to do with the audits and survey work that was done more recently; is that right?
A. Yes.
Q. That's --
A. That's part of my opinion or part -- that provides some of the substantive basis for what I talk about.
Q. Right. And that work was done in '96 or '97?
A. '97.
Q. In terms of survey data, are there any other survey aspects to your opinions about risk perception

other than the '85 audits and survey work, your Durham work and the '97 audits and survey work?

A. Well we've also done work on smokers and the jobs they pick, the job risks they choose and their attitudes toward job risks which shows consistence in behavior across risk-taking domains, so that involves other surveys.

Q. Would your seat belt article be an example of that work?

A. That's one. I have another new one in the same vein but with a larger national data set.

Q. Is it published?

A. It's not published but it's being presented at the American Economic Association meetings this year.

Q. Is there a version of that article that's available to us?

A. Well there's a version of the article. The question is whether it's available, because right now I don't -- I'm not generally circulating it, but I can inquire with my counsel as to what I have to give you and what I don't have to give to you. Nobody other than myself, my co -- and my coauthor have read the article, so it's not something that I'm circulating professionally, so it's still in draft form.

Q. Are the opinions expressed in that article fundamentally different from your prior views on the same subject?

A. The only thing we add is that within jobs of given objective riskiness smokers are more likely to have accidents, smokers are more likely to have accidents at home, so essentially smokers are riskier people than nonsmokers.

Q. Riskier or more accident prone?

A. Same thing. Well that -- I use them interchangeably.

(Discussion off the record.)

BY MR. SILBERFELD:

Q. We'll take up later in some fashion probably a discussion whether we should have access to that draft article, but tell me the premise --

MR. ATKESON: Roman, just let me ask him a question.

MR. SILBERFELD: Sure.

MR. ATKESON: When is the conference at which you're presenting this?

THE WITNESS: January.

MR. ATKESON: And when are you -- when will it be available?

THE WITNESS: We'll send it out to

discussants at least a month ahead of time, so Thanksgiving.

MR. ATKESON: If you got it around Thanksgiving, would that be --

MR. SILBERFELD: We can talk about that. I know there's another round of depositions, potentially, so --

BY MR. SILBERFELD:

Q. Tell me the premise of that paper. What were you studying?

A. The basic question is whether smokers are more willing to bear risks or engage in risk-taking behavior of other kinds, using smoke as a proxy for attitudes toward risk, so looking at the labor market the article asked essentially three questions: First, did smokers work in higher-risk industries? The answer to that was yes. Second, for any given risk on the job, were smokers more willing to incur the risk? And the answer was yes, they required less wage compensation to work in a risky job than nonsmokers do. And third, are smokers more accident prone on risky jobs? And that -- the answer there is yes.

For any given objective risk of the job, smokers are more likely to have injuries. And also it's true

that smokers are more likely to have accidents at home and in other contexts as well.

Q. From that study, did you make any determination as to why those yes answers were true about smokers?

A. Well you can't really distinguish is this rational behavior, is this because smokers are always being irrational in every context, but you can conclude that at least smokers are being consistent. And although we didn't conclude it in the article, one implication would be if you did not control for other risk-taking activities of smokers other than cigarette smoking, per se, then looking at the medical care costs of smokers would overstate the smoking-specific component of those medical costs because smokers, as a group, do things that are risky in ways beyond smoking.

Q. And they result in injury which would require medical care.

A. That's correct.

Q. In that paper, do you quantify the accident-prone nature of smokers in any way as compared to nonsmokers engaged in the same activity?

A. Yes. And --

Q. What is it?

A. The ballpark estimate, on average a typical

person might have a two percent probability of having an accident, whereas smokers would have a three percent probability.

Q. So 50 percent increase?

A. So there's a big increase, yes.

Q. Did you study any particular jobs or job classifications in that data?

A. This was a national data set. It was the National Health Interview Survey. It's a very large data set.

Q. Can you recall any particular jobs or job classifications, just so that we can have an example to talk about?

A. Manufacturing worker.

Q. Like an auto worker in an auto plant?

A. They're in there I'm sure.

Q. Okay. And the study was of nonsmoker assembly line automobile worker compared to smoker assembly line automobile worker, same age, same level of experience and so forth?

A. Well, controlling statistically for that. That would be the idea of what you're doing statistically.

Q. And looking at that pair of individuals, the smoker was 50 percent more likely, roughly, to run risks or incur injuries than the nonsmoker?

A. Except it was based on thousands of individuals, yes, yes.

Q. Oh, sure.

A. But that's the nature of it, controlling for education levels, gender, years of experience on the job -- all of the other usual factors that you'd want to take into account.

Q. Does the finding you made with your colleague or colleagues have any implications for your risk-perception opinions about smokers and their perception of the risks of smoking?

A. The -- One hypothesis you could have is that the reason why smokers are gravitating toward risky jobs is that they underestimate those risks, and it could be they underestimate everything. We ruled out that as a possibility in our Journal of Human Resources article because there was no evidence of smokers underestimating job risks, and the evidence was inconsistent with that so there's no evidence in that domain that that's the cause.

Q. Did you come to any conclusions about your risk-perception opinions based upon the work in this '97 paper we've just been talking about?

A. No. No.

Q. Have you used in any way the fact that you found

smokers incurring more injuries and therefore requiring more medical care costs in your longitudinal lifetime analysis as it relates to healthcare costs of smoking?

A. Have I incorporated this?

Q. Yes.

A. I've not redone my social cost analysis.

Q. Other than the '85 and the '97 audits and survey information, the Durham sensitivity work, if we can call it that for lack of a better label, the seat belt article and the '97 article that we just spoke of, are there any other sources of information or building blocks, if you will, of your risk-perception opinions? Other than your general training and experience. We'll get to that.

A. Some things relate to it as well, so that I've done surveys analyzing how people perceive hazard warning labels, and those included labels that were patterned after cigarette warnings.

Q. And you've published on that?

A. That would be in my book with Wes Magat, M-A-G-A-T, Informational Approaches to Regulation.

Q. What is the significance of that work as it relates to your risk-perception opinions? That particular source.

A. The initial surgeon general's warning back in 1964 is viewed by respondents as a very strong warning.

Q. Based on survey information?

A. Based on survey information.

Q. Any other work that relates to your risk-perception opinions other than what we've talked about and your general training and experience?

A. Just general background in the risk area.

Q. When you were first contacted earlier this year by Mr. Atkeson, did you agree right away, right then, to act as an expert witness in this case?

A. I'm not sure of the character of the event even, so whether it was a would you be willing to testify on XYZ issues in the group of states or in a single state, I'm not exactly sure how it took place, but I agreed to testify on certain topics.

Q. Are those the three we talked about?

A. Those -- The ones that are on the list, yes. And in Florida I'm testifying also on the social cost issue.

Q. Not anymore you're not.

A. I know. I testified briefly.

Q. So you agreed to testify about your general work on smoking, risk perception and social costs?

A. Market share.
Q. That was going to be my next question.
Any other topics that you agreed to testify about other than those four?
A. Well, I don't recall. I mean, risk perceptions and how people make smoking decisions generally.
Q. Yeah, that's in smoking-risk perception, and then social costs and market share. Any other topics that you agreed to testify about generally?
A. I can't think of any.
Q. At the time that you first agreed to testify as a witness in Minnesota, what did you know about this particular case?
A. Well I'd had a discussion with Skip Humphrey, we were both on a radio show together, so I knew generally what he was thinking on this topic.
Q. When was that?
A. Earlier this year. And I just knew there was a lawsuit and I would just come here and tell people what I've done in terms of my research, so I didn't know much more about it than that.
Q. For example, did -- do you understand or did you understand at the time you agreed to be a witness in this case that the State of Minnesota or Blue Cross\Blue Shield was making a market-share-type

claim in this lawsuit?

A. I didn't know which states were making market-share claims, I just knew that I developed a -- an opinion on market share and if market share came up as an issue I would state my views.

Q. Is the answer to my question that you really don't know one way or the other whether Minnesota was making such a claim?

A. That's correct, until we prepared my expert opinion.

Q. And is it your understanding now that Minnesota is making a market-share claim?

A. Well I assume it's in my expert opinion for a reason, and I was not mislead and that you're not misleading me so I assume that there is a market-share claim.

Q. When you assume it, what's the basis of that assumption, something counsel told you or something you read or what?

A. Mr. Atkeson indicated that market share was a topic that we would include in my expert opinions.

Q. The report that we have from you consists of, putting aside the exhibits and the attachments and so forth, three pages. Did you prepare the report yourself, alone?

A. I'm not sure how it was compiled. I know the wording is mine, in fact it resonates with language that is my phrasing all the way through. I think it may have been partially pieced together based on reports I'd done in other states, but these are definitely my words, I wrote it, but I don't recall exactly who did the typing of it, whether it was done at my end or his end.

Q. This report for this case, are we agreed that it's three pages?

A. Yes.

Q. With a cover page, obviously.

A. Yes.

Q. And was this report written for this case specifically?

A. I don't recall. This particular report was, but whether portions of this report appear in reports I did for other states, I would have to look at those reports and see what the overlap was.

Q. So it's possible that -- that either a paragraph or a page or a section of this three-page report may have appeared in another report.

A. Yes.

Q. For another case.

A. That's possible.

Q. And may have been lifted from a report you wrote prior to this one and incorporated here.
A. Yes, that's possible.
Q. But regardless of those mechanics, you adopt each and every word in this report as your views as you sit here today; true?
A. I haven't seen any words that are not mine, and this is the text I've written, so this was not drafted for me, this is my -- this was not drafted for me, this is my text. This is my language.
Q. And therefore you adopt every word in here as being words of yourself.
A. Well I think every word -- I mean, I would have to read it, if you want me to break to read it again, but when I read it over on the plane coming in here I didn't see any words that I wouldn't adopt.
Q. You wouldn't have signed it if you didn't think it was a true representation of your views, would you?
A. No. I wouldn't have signed it.
Q. And that is your signature on the last page?
A. That is.
Q. Have you ever seen the Complaint in this case?
A. Yes.
Q. When did you first see it?

A. Yesterday.
Q. Who showed it to you?
A. It was faxed to me.
Q. By whom?
A. Mr. Atkeson's secretary.
Q. For what purpose?
A. Well it's often come up in these depositions have you seen the Complaint in the case, so he sent it to me just in case I was curious about the Complaint in the case.
Q. Did you ask to see it or was it offered to you?
A. It was offered to me.
Q. Did you read it?
A. Quickly, so it was read on the plane.
Q. And what did you understand, from the reading of the complaint, the claims in this case to be?
A. Essentially the state and Blue Cross\Blue Shield are suing the cigarette companies for the costs associated with smoking.
Q. Is that the end of your answer?
A. These entities do not have a high opinion of the cigarette industry so that they were critical of a lot of the behavior of the industry.
Q. Do you have a high opinion of the cigarette industry?

A. I don't judge any industry in terms of its performance. I don't make moral judgments or economic judgments.

Q. What's your personal opinion?

A. I think they've been a reasonably successful, long-run industry, so over the long haul they've still maintained a viable product that consumers want to purchase and they've remained profitable for a long period of time.

Q. Do cigarettes kill people?

A. People die because of smoking, yes.

Q. You've in fact said cigarettes kill people, haven't you?

A. I may have said smoking kills or something to that effect, but yes.

Q. And in fact smoking killing people is one of the underlying premises of your cost approach; right?

A. It's one of the factors I take into account. If you're going to analyze the implications of the health effects of smoking, then that would be one implication of smoking.

Q. And that implication, just to put it in lay terms if I may, is that the early or premature death of people from smoking and the cost savings associated with that should be considered in any

larger cost assessment; right?

A. That would be one factor, but premature death enters in other ways as well, so when you're tallying the costs associated with smoking you should examine the period of time when smokers are --

(Interruption by the reporter.)

A. -- alive and not charge them for costs that are not incurred after they are dead.

Q. You believe, in order to reach that conclusion, that smoking does cause premature death; right?

A. You're asking for a personal view or --

Q. Yes, your view. You're the witness.

A. I think smoking does increase the probability of death, yes.

Q. And is that probability for smokers more-likely-than-not probability?

MR. ATKESON: Objection. You're calling for a legal conclusion?

MR. SILBERFELD: No.

A. Is it above 50 percent? No.

Q. How about for lung cancer, is it above 50 percent?

MR. ATKESON: Same objection.

Q. Is it more likely than not that a smoker who contracts lung cancer and dies from it had that lung

cancer as a result of a smoking habit?

A. More than half of the cases of lung cancer have been attributed by scientists to smoking. Whether a particular individual's lung cancer is due to smoking as opposed to working with asbestos or living in Newark, New Jersey depends on the circumstances of the individual.

Q. You've heard the figure 80 to 90 percent of lung cancer deaths of smokers, at least in men, are attributable to smoking. You've heard that figure, haven't you?

A. I've heard higher numbers.

Q. I was trying to give you a low number.

And you accept those as true, do you not?

A. I have not formed an independent judgment on the medical evidence. What I've done in my research is to take that evidence at face value in my analysis. That doesn't imply that I've looked at it and concluded that it's right, but at least for the purposes of the analysis I'm going to run with those numbers rather than get embroiled in a battle over the underlying medical data.

Q. It's the best evidence available, isn't it, those figures?

A. Which figures?

Q. The surgeon general's figures.
A. Well the surgeon general's numbers are the ones I use as the reference point. I'm not sure it's the best available, but it is the most widely accepted.
Q. By a variety of medical organizations; right?
A. Well it's the -- it's an official position of the United States Surgeon General, which would give it some prominence.
Q. And it gives additional prominence to it by reason of the fact that organizations, medical and scientific organizations join in that view; isn't that true?
A. I'm sure some organizations do endorse it.
Q. You're not aware of any that endorse the views of the surgeon general?
A. I'm not aware of like -- The surgeon general comes out with an annual report, I'm not aware of there being a list of organizations that comes out and says, yes, this year the American Cancer Society and these 30 organizations endorse the report, last year we didn't really endorse it but this year we did. So I don't think there's a formal endorsement process, but these statistics are widely used.
Q. And you accept them as true for purposes of your analysis.

A. I use them as a reference point. That doesn't mean I accept them as true because I have not analyzed them to see the methodology that lead to all the results. I've read the surgeon general's reports. Generally these would not pass muster in the economics world in terms of statistical tests that control for the multiple factors causing different outcomes, but I'm not going to get in there and redo all these things.

Q. Well you wouldn't use data as a reference point that was inherently unreliable, would you, or that you knew to be unreliable?

A. If -- I'm trying to say, for the sake of argument, I'm not going to get into a squabble with the surgeon general. I'll even take his figures as given or her figures as given and then proceed, given that, let's run with it and see what the implications are. That's a perfectly valid approach because it's a government reference point, so I view this from the standpoint of an academic article as something I could do even if I didn't fully endorse the underlying data.

Q. That sounds to me like a garbage-in-garbage-out concept. If you don't accept the reference point as valid and you use it, doesn't that affect whatever

conclusion you might reached based on that reference point?

A. Well the analysis is conditional on that reference point. I have not formed an independent judgment of the reference point. The fact that it's the U.S. Surgeon General gives it more credibility and salience in the discussion than a study that might be done by a student of mine or a colleague at Duke or whatever.

Q. Are the figures of the surgeon general reasonably reliable from your standpoint, in order to use them as reference points?

A. I don't know how reliable they are. They may overstate the risk to the extent that they do not include the multivaried controls. However, I have no better definitive reference point to use for my research, and since that's the best evidence out there that's published and is widely accepted, I've used it as the reference point.

Q. Have you done a search of the literature to determine whether there is a better reference point out there available to you?

A. I didn't do an extensive search because I hadn't run across anything as being cited, and the surgeon general's report, because the surgeon general does

have an official position, makes a very convenient consensus reference point that most people would regard as some kind of synthesis of what's out there.

Q. A consensus view?

A. It should be a consensus view. Whether it is or not depends in large part upon who the surgeon general appoints to write the report. So I certainly don't agree with everything in the surgeon general's reports, particularly regarding issues of social-science-type nature, but I believe it's intended to be some kind of consensus scientific view.

Q. And do you believe it is a consensus scientific point of view?

A. I have not seen any detailed published critiques from the medical profession of the surgeon general's reports, but generally people in that field don't have the same degree of sophisticated scientific or statistical techniques that have been developed in econometrics, for example, so that conceivably if statisticians or econometricians were to take a look at it, they would have more of a critique of it.

Q. Have you ever done a critique yourself of the work of the surgeon general, say the '89 report about the health consequences of smoking?

A. In terms of the health --
Q. Yeah.
A. -- effect?
Q. Umm-hmm.
A. No, because that's not the academic game I was playing. I was not setting out to analyze the validity of the surgeon general report analysis, but instead was focusing on whether people's behavior made sense, if what the surgeon general said was true.
Q. Well the way in which you used the surgeon general's figures, as I understand it, relates to the gap between the published figures by the surgeon general about risks of smoking and people's perception about it. Is that a fair summary of it?
A. That's true.
Q. And in determining whether people's perceptions about smoking are what they appear to be from the survey data you did a number of scientific maneuvers, if you will, to check the validity of the perception results you were getting; true?
A. That's correct.
Q. One of them was the Durham sensitivity study of the '85 audit state; right?
A. That's right.

Q. What did you do on the other side of the equation; that is, what did you do to test the validity of the surgeon general's figures, if anything?

A. Well I believe I updated some of the cancer risk figures based on statistics not published in the surgeon general's reports but published in a medical journal. I've tried to kept a -- keep abreast of the literature, at least at that time, and I didn't see any studies other than the one on cancer that I would want to use to update it.

As for the study itself, to come up with a different reference point would require redoing the surgeon general's report and getting into health-risk-estimation issues that were not on my research agenda. That's not what I was doing.

Q. Did you perform any sensitivity tests or any validation test of what the surgeon general had concluded in order to satisfy yourself that that reference point was a legitimate and honest one?

A. Well the surgeon general's range is fairly big, so the surgeon general doesn't pinpoint the risks so we already have some sort of sensitivity test incorporated into the estimates because the estimates comprise a fairly broad band. But I did not do any

independent statistical work on the surgeon general's risk estimates.

Q. And what's the reason for that?

A. That's not what I was interested in, that's not what I was writing the papers about, that's not what I was writing the book about.

Q. As part of the scientific method of investigation that a scientist like yourself engages in, you try, do you not, to test the validity of the results that you get?

A. Yes.

Q. And you did that, as we talked about, with the survey data.

A. That's correct.

Q. And with respect to the surgeon general's data, you accepted it for what it was without further validation or testing for sensitivity; true?

A. I took it as given, yes.

Q. And the reason you took it as given is because you accepted it as true.

A. No, I accepted it as being a salient reference point and this was not the topic I wanted to research. I did not want to do an ex-post rehash of the surgeon general's reports. I was interested in behavior of smokers and the smoking decision, which

is a different issue.

Q. Well suppose that the surgeon general had made a mistake and in fact underestimated the risks of smoking and disease by a hundred percent and you used the published figures and compared them to the risk-perception numbers you got from smokers. That would change your conclusion, wouldn't it?

A. That would change it, but as I've pointed out, what the surgeon general didn't do was undertake the detailed kind of multi-varied analysis that is the norm in economics. To the extent that smoking is correlated with other risk-taking behaviors, this would make the surgeon general's estimates too high, if anything, so I was not that worried about the estimates being too low.

Q. Other than the complaint which you saw for the first time last evening, have you looked at any other documents that are specific to the Minnesota case?

A. No.

Q. Have you seen reports of any experts in this case?

A. I've been given some reports. I'm not sure which states these experts are in, but I don't believe I've seen any reports of experts in this case. That's my best guess, but I couldn't rule that

out.

Q. Do you remember the names of any of the experts whose reports you've been given?

A. No.

Q. Or their areas of interest or expertise?

A. No.

Q. Did those reports -- Well, withdraw that.

Did you read those reports?

A. I read some of them. I've read nothing specifically for my preparation for this deposition or for the Minnesota case.

Q. What preparation did you do for the Minnesota case and for this deposition here today?

A. I put the fax of my opinion and the fax of the charge against the cigarette companies in my briefcase and got on a plane.

Q. The "charge" is the Complaint?

A. The Complaint.

Q. You travel light.

A. This is my preparation for the deposition.

Q. In preparation for the deposition, were there any telephone calls or meetings with counsel other than for the details of where to go and when to go there?

A. No. Counsel asked me if I wanted a copy of the

Complaint, I said sure, and that was about the extent of our discussion.

Q. Have you seen the damage study that has been prepared by the State of Minnesota and Blue Cross/Blue Shield in this case?

A. No. Not that I know of anyway.

Q. Have you seen any damage study from the plaintiffs' side of any of these state cases?

A. I have seen some damage studies.

Q. Which ones?

A. I don't remember their names.

Q. Do you know what states?

A. Florida, I remember Jeffrey Harris.

Q. Any others?

A. I've seen some other ones but -- or at least one other one, but I don't recall the name.

Q. Do you have any present intention of looking at the damage study prepared on behalf of the State of Minnesota and Blue Cross\Blue Shield?

A. I haven't been asked to look at it, so until I've been asked, I won't do it.

Q. Do you have an understanding as you sit here today as to what the damage approach is that's been adopted by the State of Minnesota and Blue Cross\Blue Shield in this case?

A. Well I haven't read the report and they haven't discussed it with me so I would have -- everything I have as an opinion would be mere conjecture. So I don't know what the contents are.

Q. You'd be guessing at this point.

A. Yes.

MR. SILBERFELD: Tim, is that a subject that Dr. Viscusi or Mr. Viscusi is going to get into that you're prepared to commit to now?

MR. ATKESON: No. We've designated him to talk generally about what the proper approach to damages is, and then to the extent that -- I mean, he will testify that there are problems with doing other things, but that will all be of a general nature. I believe that Ed Foster will be the one talking about your damage model on that. If that changes we'll let you know, but we have not asked him to do that. But you need to understand, he is going to -- I mean, we've given you his opinion on how he thinks it ought to be done.

MR. SILBERFELD: Sure. We'll get to that after awhile.

BY MR. SILBERFELD:

Q. What is the total number of hours that you have spent in preparation for this case?

A. Under a day. Let's call it a day. Most of that was travel time so I'm -- you know --

Q. That was coming out from Boston yesterday?

A. Coming out from Boston. It was not an uneventful trip.

Q. When you were first contacted about testifying in several state cases, did you understand at that time that the claims being made were the same by all the states?

A. I knew the theme of the claims, which was to recoup the Medicaid-related expenses, seemed to be common across the states.

Q. Is the work that you've done in conjunction with your retention as an expert in the other cases transferable or applicable to the Minnesota case, in your view?

A. I think my opinions would be fairly similar in all of the states. The main difference is that in Florida I did state-specific work reviewing the analysis by Jeffrey Harris and other materials.

Q. That is really what I was thinking of. There's a formula you created in your insurance costs of smoking paper which counsel was kind enough to fax me yesterday. It's a page called "Florida Calculations." Do you recall that, sir?

A. Yes.
Q. Would this calculation be transferable directly to the State of Minnesota and its damage claim? Or would it require adjustment, I guess is the question.
A. Well you put it in Minnesota numbers instead of Florida numbers, but this is how I did the calculations. This is essentially the blueprint for doing the Florida calculations, and in the same article I report the Minnesota calculations. I should also add that I've changed the aggregate table for all states, including Minnesota, so those numbers are not correct. This was a draft article --
MR. ATKESON: He's got the --
THE WITNESS: Oh, he has the corrected ones?
MR. ATKESON: Right.
A. Okay. So then they are correct.
Q. Well, let me just confirm with you.
A. Those are the -- Those are the corrected ones.
Q. Okay. I --
A. I can see.
Q. I'm showing you the table at the back of your 1997 paper called the government -- "The Governmental Composition of the Insurance Costs of Smoking."

MR. ATKESON: Counsel, let me just state something for the record.

MR. SILBERFELD: Sure.

MR. ATKESON: If I wasn't clear on the phone yesterday, the article ends on whatever, page 35. The pages starting with "Florida Calculations" that you just showed him was work that he did in response to the Florida deposition. It uses -- starts with the article as a premise, but the article's dated April 10th and the work starting with "Florida Calculations" was performed much more recently. So when you say "the article," these are not meant to be one in the whole.

MR. SILBERFELD: Okay. If you told me that, which I'm sure you did, I misunderstood you.

MR. ATKESON: Okay.

BY MR. SILBERFELD:

Q. So the article itself is 36 pages, and then following that is this Florida calculation, which is two pages, and then following that, the last couple of pages are the "State Cigarette Smoking Externalities." And are these the corrected figures, Mr. Viscusi?

A. Yes, they are.

MR. ATKESON: Just for the record, that

replaces the table between pages 25 and 26 in the article.

MR. SILBERFELD: Great. Why don't we take five.

(Recess taken from 9:40 to 9:42 a.m.)

BY MR. SILBERFELD:

Q. Before the break we were talking about this two-page Florida calculation. I think my question was whether this, assuming we were going to plug in Minnesota figures, is the formula that you would use to calculate Minnesota's costs as you see the costs to be calculated.

A. That's correct.

Q. So there aren't any conceptual differences in your approach between Florida and Minnesota; true?

A. That's correct.

Q. Do you know if there are any differences in the manner in which Florida on the one hand and Minnesota on the other approach their damages? Or does it matter?

A. I'm not doing a damages calculation for Minnesota, so these are the calculations I've done and these are how I would think about the calculations.

MR. ATKESON: Let me state for the record

just so -- There may have been a misunderstanding. The last pages here were not his report on his damage calculation in Florida. We were going to elicit that through testimony using pieces of what was in this report. But, for instance, Florida is not -- did not include in its complaint, because of the statute, a number of things that Minnesota had, so a number of the elements that are in that table would not have been included.

MR. SILBERFELD: Okay.

MR. ATKESON: So when we were going to ask him in Florida what the damages were we would have just picked selected items out of that table that fit Florida's Complaint.

MR. SILBERFELD: Okay.

Q. What is your understanding as to which party you're testifying on behalf of in this case?

A. I assume I'm testifying on behalf of the cigarette industry rather than the plaintiffs.

Q. The entire industry?

A. R.J. Reynolds pays my bills, or the law firm associated with R.J. Reynolds. On the other hand, I've been working with Arnold & Porter which represents Philip Morris, so presumably they're involved to some extent as well.

Q. Have you agreed to testify for Brown & Williamson in this case?

A. Nobody's asked me to testify for any particular firm. I've just been working with Jones Day and Arnold & Porter. If these firms represent Brown & Williamson, then I'd be testifying, presumably, for them, too, but since I don't know that I'm testifying for anybody, from my standpoint it's really irrelevant other than the fact that I wanted to be paid by Jones Day.

Q. So it doesn't matter who you're testifying for as long as there's an agreement as to the compensation for your time.

A. And so long as I'm just talking about my research. I'm not saying anything company specific so that it doesn't matter which company.

Q. Have you at any time spoken to any tobacco company researcher or scientist?

A. Is that the question?

Q. Yes, sir.

A. Yes.

Q. On how many occasions?

A. Probably two occasions.

Q. Tell me about those. When was the first one?

A. I was asked to consult on the design of the

hazard warning label for the Premier cigarette, and I met with lawyers for R.J. Reynolds, and there may have been a researcher in the division, somebody from operations was there, and I also met more recently with scientists at R.J. Reynolds who had been working on the smokeless cigarette, Premier, and analysis of it.

Q. The work with regard to the hazard warning on Premier was when, roughly?

A. Right when it came out, so I could look up when -- when it hit the market, but right when it was initially test marketed there was a problem with the tip of the cigarette coming out and being a fire hazard and I was called in for advice on the warning label so -- It may even be in my book, the date.

Q. And the work on the smokeless cigarette, when was that?

A. Well that -- Premier, that was the work. The other time, meeting with the scientist, was not paid work. It was just I met with a scientist who came to see me about the smokeless cigarette.

Q. And when was that?

A. A couple years ago.

Q. Two to three?

A. One to two.

Q. And what was your role in that discussion about the smokeless cigarette?
A. They were enthusiastic supporters of the smokeless cigarette, they had a stack of studies indicating that it had very good properties, and the real question was, you know, how could this thing, you know, see the light of day given the fact the last time R.J. Reynolds went out with a smokeless cigarette the government essentially hammered them. So how could they do this in a way that would get broader public acceptance of the cigarette both by the government as well as by the marketplace.
Q. What was your understanding as to why they were talking to you about that?
A. My field of expertise is risk analysis, and this is what I've been doing for 25 years, and I've written about smoking, I've written about the smokeless cigarette, so they had read the portions of my book dealing with the Premier cigarette and they were just seeking advice.
Q. What advice did you give them?
A. Mostly I sympathized with their plight since this is something the government should embrace rather than oppose, and I suggested that they needed some sort of definitive scientific backing endorsing

it that would lead the government to want to accept it rather than oppose it.

Q. Did you suggest to them a plan of action as to how to accomplish that goal?

A. No, but they sent me a compendium of the studies they did. So it may have been more than one or two years ago, it may have been two to three. They sent me a compendium of the studies that had been done. So I -- I just met with them briefly.

Q. Other than those two experiences, hazard warnings as it relates to Premier and the meeting with the scientists who wanted to talk to you about the smokeless cigarette, have you at any time met with any other tobacco company researchers, scientists, so forth?

A. No.

Q. Have you prior to today seen any tobacco company documents of any kind related to what they knew at any particular point in time about the propensity of cigarettes to cause disease?

A. No.

Q. Have you prior to today seen any documents from any tobacco company that discuss in any respect whether or not nicotine in cigarettes is addictive or dependence producing?

A. No.
Q. Have you ever visited any document depository that's been created in connection with any tobacco litigation?
A. No.
Q. Do you know that there is such a thing?
A. I didn't know that it was open to the public, but I knew that the plaintiffs, for example, had a depository of documents they were sharing. I didn't know who had access to it.
Q. Which plaintiffs?
A. I'd heard that the states, or at least the sta -- there's the issue of whether the state's supporting the national agreement would share their documents with the other states who weren't supporting the national agreement.
Q. Are you aware that there's a Minnesota depository?
A. No. I'm willing to take your word for it.
Q. And since this is the first you've heard of it, I take it you've never asked to go there.
A. That's correct.
Q. Or asked to see any documents that might be in the depository.
A. That's correct.

Q. And as I understand your testimony from prior cases, reviewing, considering and understanding industry documents about what they knew about smoking and health would not change your views in any respect. Is that true?

A. Well my views are with respect to how the public thinks about this, so that's different.

Q. Is how the public thinks about it potentially affected by what companies might say about cigarettes and health?

A. It could be affected by that.

Q. So public perception about smoking could be affected by what companies knew about it?

A. It probably is not affected by what they knew, but how the public thinks about smoking could be affected by company actions.

Q. And company admissions.

A. What companies say, what information they provide could affect risk beliefs.

Q. Can risk beliefs be affected by a company's denial about health effects about its own products? Put another way: Can a company's denial that its product causes health problems affect public beliefs about that product and the connection to causality?

A. As opposed to the company saying there are

health problems?

Q. Well we'll get to that next.

First let's start with the company denies that there are health effects of its products. Can that affect public perception of risk?

A. It could lead to a different outcome than if the company said there are health problems with its products. It's a question of how potent company statements would be given the fact that the government has also weighed in with information. So the relative informational content associated with the company statements in either direction may not be high.

(Discussion off the record.)

Q. In your risk-perception work, have you ever evaluated the potency of an admission made by a person or a party?

A. I have evaluated the potency of different hazard warning labels testing for their informational content as well as the risk level, so that two measures of potency would be what level of risk you're providing, and secondly, informational content or credibility that that information has relative to the information you already have.

Q. When I refer to an admission, what I'm referring

to in a non-legal sense is a person whose liability or responsibility may be affected by making a statement. Can you accept that definition for right now?

A. So an admission is something that's going to put them at risk in the courts?

Q. Maybe.

A. Potentially.

Q. Or in the court of public opinion or in a moral sense, any of those.

Can you accept that definition of an admission?

A. All right.

Q. In terms of potency in terms of how it affects beliefs by the public, do you believe that an admission, as I have defined it for you, has more power than what a third party might say about the same subject?

A. I don't know. We've done work on risk information provided by companies and by the government and when there are conflicting views, and it's not so much who said it, but what everybody else says in the context. So we found that even companies admitting high risks, if the government thinks the risk is low have -- does not have a strong effect. It's not much different than the company saying the

risk is low and the government saying the risk is high.

Q. What paper or work are you thinking of that discusses this topic?

A. I have a forthcoming paper in the Economic Journal.

Q. Not published?

A. Published this month or last month, so I don't have it yet but it's scheduled -- it's in the September issue of the Economic Journal. It's on my list for forthcoming. It's something like alarmist responses to risk information. Alarmist responses to divergent risk information.

Q. Right. 179 in your --

A. Right.

Q. -- CV.

A. I should also add that's another survey where smoking comes in. We analyze how smokers think about risks.

Q. Do you in that article discuss the effect, if any, on public perception of an admission by a cigarette company that its product may cause disease?

A. No. We do as a chemical pollution context as opposed to cigarettes.

Q. Is it a real-world example or is it

hypothetical?

A. It's a survey we undertook for EPA that is a hypothetical construct based on what could happen in the real world, but this is work that EPA wanted done to guide them in their risk-communication efforts.

Q. Is a copy of this paper available?

A. Sure.

Q. Okay. How would we get it?

A. I could provide it to Mr. Atkeson.

Q. Is there anybody back in Boston who could fax it to us?

A. If we catch him before lunch we can get my -- get a -- I can call my assistant slash secretary and see if he could do it.

Q. Maybe at the next break we can ask you to do that.

This alarmist response -- Alarmist Decisions paper about to be published, what conclusion does it reach about companies admissions of the health effects of its products and the effect on public beliefs?

A. In situations in which there's a divergent risk judgment, so let's say one party thinks the risk is high and the other party thinks the risk is low, people generally gravitate to the worst-case scenario

and think the risk is high.

Q. Does this paper discuss at all who it is that's making the divergent risk judgments; that is, the manufacturer of a product on the one hand and a scientific body on the other, for example?

A. Yes. We do it both ways. We do it government government, high low; industry industry, high low; government high, industry low; industry high, government low. And it's the divergence of the opinions that's more consequential than who's providing it. And when there is this divergence, people tend to overestimate the risk and focus on the worst-case scenario.

Q. So the conclusion you reach is that an industry or a company that would publicly say our product causes disease has no greater or lesser impact on risk perception than if the government were to say it or a competitor in the same industry would say it; true?

A. We didn't find a significant difference here in terms of the mix. So if the government's saying the risk is low and the company says the risk is high, that is not going to be much different than the government saying the risk is high and the company is saying it's low. I hope I got those split

differently.

Q. The conclusion you reach is that it doesn't matter who's providing the information?

A. It's the diverse --

Q. People --

A. It's the diversity of the opinion, rather than the identity, that seems to be the major driving force.

Q. Any other papers other than the Alarmist Decisions paper that supports that view?

A. I have another draft paper using the same data set, but this essentially is the main one.

Q. Is it listed here, do you think?

A. No, no.

Q. Let me show you the version of your CV that we've been given and tell me, if you would, whether it's current.

MR. ATKESON: This is from Mississippi.

A. I have more recent ones that -- No, it's not current.

Q. Okay. Can you update it for me as best you can from memory? And maybe counsel can furnish us the last page that might contain the last of the articles. Go ahead and update it as best you can.

A. Clean Air Compliance Analysis Council, I'm not

-- I resigned as a member but they wanted to keep me on as a consultant, and I'm still a member of the other science advisory board. My term as an editor or being on the editorial board of the Journal of Environmental Economics and Management expired.

MR. ATKESON: Is the 17th book listed?

A. Book number 16 is retitled and it's done, called Rational Risk Policy. Book number 17 on energy I won't be doing. Instead, I'm doing book number 17 called "Calculating Risks?" for MIT Press.

And also my forthcoming article count now goes up to 200 instead of 190.

Q. So there's 10 additional articles not listed here that are either published or in process?

A. Right. And I never list working papers. So some of the things we're talking about are working papers, they won't be on my vitae.

Q. Perhaps when we call for the Alarmist Decisions article we could just have the last page of the CV faxed that contains the last 10 published articles. Could we do that?

A. We can probably Xerox it here.

Q. Oh, you have it? Terrific.

A. Mostly to correct typos in it but --

(Discussion off the record.)

BY MR. SILBERFELD:

Q. Are there, Mr. Viscusi, other articles that you've authored that discuss the subject we were just talking about before we took that detour, and that is, that it doesn't matter who provides risk information in terms of public beliefs, it's the deviation that is important? Is that a fair statement of the Alarmist Decision article?

A. In that paper the identity was not as consequential as the diversity of opinion. That was the main theme. So it was the diversity of risk judgments.

Q. And you said the conclusion there was that the identity was not as consequential. Was it consequential at all?

A. I remember that's not what the article was about, so it was about diversity of the judgments. But it's all in there.

Q. Are there other papers that discuss whether or not the identity of who provides the information is consequential or not?

A. Just a working paper I'm doing with the same data set, but if you've seen this paper you basically get the gist of it.

Q. Anything else in your experience going all the

way back?
A. Not that I can think of.
Q. Are there literature references that you can give us that talk about this subject; that is, whether or not the identity of who provides information in the risk-perception context is of consequence?
A. No. I mean, I talk about the informational content and how the character of the warning matters, but I haven't seen any good discussions in the literature on that.
Q. It's true, is it not, that in order for information to have power it has to have some convincing force?
A. Yes.
Q. And is part of that convincing force the identity of the person or entity providing the information?
A. The credibility of it could be affected by who said it, yes.
Q. And is the credibility of it enhanced if the person speaking or the entity speaking may incur either moral, ethical, business or legal liability by making an admission about the subject under discussion?

A. I don't know if that's clear. Some of the most credible sources might be the National Academy of Sciences, and I don't think anybody is thinking about suing them.

Q. What about a company? Would a company's admission about the health effects of its products, if clearly made, be convincing in terms of public beliefs about that product?

A. I'm not sure how much people are going to believe company statements as opposed to the government, so I think the government statements would be more convincing.

Q. Have you in the course of your work ever tested, in survey fashion or in any other way, people's attitudes towards government and government statistics?

A. Well this is one of the papers that looks at it.

Q. And what conclusion do you reach about the public's beliefs about what its government tells them?

A. No. In this case it did have an effect on risk beliefs.

Q. I'm sorry?

A. It did have an effect on risk beliefs.

Q. How?

A. Government information.

High-risk information from the government leads people to raise their risk perceptions.

Q. In this paper, did you test at all the quality of the beliefs that people had about information provided to them by the government? That is, whether people believed what the government told them or were skeptical of it, as the case may be?

A. What we do is we get from respondents their risk assessment. That's a judgment of or an assessment of how the information affected their risk beliefs.

Q. Is risk perception any different than perception, it just happens to be about risks?

A. Except I'm getting a number out of people, I'm not getting a squishy statement, yes, this product is dangerous. So it's -- I'm getting a precise quantitative measure.

Q. Is risk perception fundamentally about perception?

A. It's about perception of risk. Different than visual perception.

Q. What other elements, in your experience, do people use in making risk perceptions?

A. They draw on the information that they have, as well as their own experiences, to form risk

assessments.

Q. And have you found, in the course of your survey work and your general experience with people that participate in your surveys, that more power or potency is given to a frank admission made by a person or an entity that may carry with it some legal, moral, ethical or business liability?

A. I haven't tested that.

Q. What's your hunch about that?

A. Well if the admission is that your risk perceptions are too high, that smoking is risky but that you, the general public, overestimate the risk, I'm not sure what effect that would have. But I don't think they'd be allowed to say that.

Q. Why not?

A. Cigarette companies are generally prohibited from making health-related claims regarding their products, which is one of the things that prevented them from successfully marketing the Premier cigarette.

Q. If a cigarette company this afternoon came out and said "our cigarettes cause cancer in human beings," you would regard that as a health claim that the government would prevent them from making?

A. I wouldn't want to make that statement.

Q. That wasn't my question.
A. I don't think it's a meaningful form of information.
Q. That wasn't my question. Let me repeat the question.
If a cigarette company this afternoon came out and said "smoking causes lung cancer in human beings," would you regard that as a health claim of the kind that the government would prevent that company from making?
A. Provided you're always saying something worse than what the warnings say the government would probably let you say it, but that's not going to lead to a situation where people are informed.
Q. From everything you know about hazard warnings in the cigarette context, is there anything governmental that would prevent a tobacco company from this afternoon making the public statement that I just suggested they make?
A. That smoking causes cancer?
Q. Yes, sir.
A. I'm -- As an economist, I don't know anything. I'm not a lawyer, so you may be asking the wrong person.
Q. Is there anything about that statement that

would in any way cause it to be a health claim about the healthful effects of cigarette smoking?
A. If you were to say different cigarettes differ in their role in causing cancer, they would not be able to say that.
Q. Not my question. Cigarettes --
MR. ATKESON: That's his answer.
MR. SILBERFELD: That's his answer to a question I haven't asked.
Q. The question is: Is there anything that would prevent a cigarette company this afternoon from saying "our cigarettes cause lung cancer in humans" from the standpoint of that being a health claim as you've used that term?
A. I don't think this would be good -- a good information policy so I would not recommend this as a way to lead people to think more sensibly about risk.
MR. SILBERFELD: Could you read the question back.
(Record read by the reporter.)
THE WITNESS: And what did I say?
(Record read by the reporter.)
Q. What's the answer to my question?
A. I gave it. I can't think of a better answer.

So if you could try a different question, maybe I could take another shot at it.

Q. Sure.

You have an understanding that cigarette companies are prevented or at least constrained from making health claims about their products by the government; right?

A. Yes.

Q. Is a statement that cigarette smoking causes lung cancer in humans in the area of statements that the government would prevent a tobacco company from making, should they decide to do it?

A. The government would probably let them say that.

Q. And if a cigarette company were to say that this afternoon, do you believe that such a statement, based on the identity of the person making the statement; that is, the company, would have an effect, potentially, on the public beliefs about the hazards of smoking cigarettes?

A. I actually don't think so.

Q. Are you aware in history of any cigarette company publicly saying our cigarettes cause lung cancer in humans?

A. Other than the testimony in Florida that was publicized.

Q. The deposition testimony.
A. Yes.
Q. Of either Mr. Bible or Mr. Goldstein; right? That's what you're referring to?
A. Whoever they were, yes.
Q. Where they said a hundred thousand people might have died, that testimony, is that what you're thinking of?
A. That's one of them.
Q. Or the other one where they said I've always believed cigarettes cause lung cancer or may be associated with lung cancer, that testimony?
A. Right.
Q. Putting those aside, are you aware of any public statement in history made by a cigarette company that says "our cigarettes cause lung cancer in humans"?
A. No.
Q. Or heart disease?
A. No.
Q. Or emphysema?
A. No.
Q. Or any lung disease?
A. No.
Q. Or any other cancer?
A. I can't think of any.

Q. And do you have a belief as to whether or not such a statement, if made, would have an effect on public beliefs about the hazards of smoking?
A. I actually don't think it would because studies of information suggest that only new information alters risk beliefs, and this is not a new piece of information that's being put out in the public domain. Lots of people have been saying something analogous to this, the surgeon general, the hazard warnings on cigarettes.
Q. Would you agree that it was new information if a cigarette company today, this afternoon, came out and "said our cigarettes cause lung cancer" if I add a fact, and that is that for 40 years they denied that their cigarettes cause lung disease?
A. Well I also don't accept that statement, "cigarettes cause lung cancer" as a statement for a warning because it implies it with certainty and I think --
Q. Sure.
A. -- that would be very misleading. So I don't think my view is any different in that respect than the cigarette companies not being willing to endorse that statement because it's not correct. It's not a 100 percent chance.

Q. Sure. It's a probabilistic factor.
A. Right. And that's why you don't want a simple three-word statement.
Q. Nevertheless, if, for whatever their reasons were, a cigarette company this afternoon decided to issue that statement, "our cigarettes cause lung cancer in humans," that would be new information, would it not, if for 40 years they denied that fact?
A. No. The information itself isn't new, you just have a new party saying it. This is like the buckle-up-for-safety buckle-up campaign for seat belts. The fact that you had a different person on a new jingle on the TV or radio saying buckle up for safety had no effect whatsoever on seat belt use because that was not new information. So changing the party is not the same thing as changing the informational content.
Q. Changing the party doesn't matter at all; right?
A. Well it could matter.
Q. How?
A. If people didn't believe the other party. But if you have a very credible information source originally, then somebody else is just hopping on the bandwagon saying yes, that information source is right, it may affect the precision of probabilistic

beliefs but you're not going to affect the level.
Q. You're not going to affect the what?
A. Their level.
Q. If a company came out and said our cigarettes cause lung cancer in humans, that would affect the precision of the public's beliefs about the hazards of smoking, but not the level?
A. It may not increase the level of their risk beliefs to the extent that the public already believes that smoking increases your risk of lung cancer, which people generally do believe.
Q. But it would affect the precision with which people believe it based on the speaker; right?
A. That's the only thing it could affect. And how much it affects the precision depends on how precise it already is. So whether it's a significant effect on the precision depends on what is the weight placed on the initial information source.
Q. In the Alarmist Decisions paper, did you study the effect on public beliefs of a controversy about health effects or disease potentiation?
A. This was a controversy in some sense in that there's a debate over the riskiness of a chem -- chemical/emissions from the plant.
Q. Give me the hypothetical context of this

Alarmist Decisions paper.

A. There's chemical emissions from a plant that cause cancer, you know, the company says the risk is -- of death is -- or of cancer is one chance in a hundred thousand, the government says the risk -- or panel of government scientists say the risk is one in about 10,000; what do you -- essentially what do you think the risk is? We did the survey a little bit more complicated than that, giving them another area they could move to that would be equivalent in risk, but that's basically the idea.

Q. So in that hypothetical chemical release there was a known cancer-causing agent; that's what they were asked to believe?

A. Right.

Q. And the company said the risk was 1 in 100,000, and the government said it was 1 in 10,000.

A. I'm just making up numbers, but that's the general idea.

Q. And I take it at some point you flipped the numbers.

A. Then we flipped it for other people so other people looked at flipped scenarios where the industry said it was high, the government said it was low, then other people looked at it where we had two

government experts that disagreed, other people looked at it with two industry experts who disagreed.

Q. And the results were in each case people went to the highest risk perception?

A. The -- They're more likely to go to the higher risk assessment if there's a diversity of risk opinion. They're more likely to average if it's a government government, industry industry.

Q. So in each of these questions the individuals were not asked who do you believe, they were asked, based on this set of facts, what do you believe the risk to be?

A. Yes.

Q. Ahh, okay. And it was those numeric values that caused you to derive the conclusions you did about where their risk perceptions went.

A. Well based on their responses you could estimate statistically who they believed. You can estimate both the -- Well, you can estimate the weight they attach to each party's information.

Q. Going back to your original retention here, has the scope of what you were originally asked to do changed in any way with respect to the Minnesota case?

A. I don't think so.

Q. The report, which is three pages, did it go through any iterations other than the final?
A. If there were any iterations, it would be just correcting typos.
Q. Was it written perhaps not for this case, perhaps for another case, but was it originally written completely by you or in consultation with anyone else?
A. I think I drafted it in pieces, and I believe which pieces were put together would have been Mr. Atkeson's responsibility depending on which state, but market-share liability, I wrote that. This is -- The phrasing like "cigarettes are not a homogenous product," et cetera, these are my words. You know, the list of all the points, these were points I developed. Every argument with respect to market-share liability is based on a concept I developed. Risk perceptions, I wrote this out based on my work. Same is true with the methodological issues.
Q. Have you kept a file of any notes that you've made along the way since you were first retained in any state tobacco case?
A. No. I have a pile of documents that I've gotten, but I don't -- I don't -- don't keep many

notes.
Q. What's in the pile?
A. Just various documents I've been provided, various depositions that I've been given, videotapes.
Q. Of your own or of other people?
A. Just me.
Q. Anything else in the pile?
A. Data I've gotten on the number of cigarettes people purchase, so I called -- I've got government data on cigarette consumption. So various background statistics I used for my calculations are in the pile.
Q. Was that information used to get the per-pack value for these various calculations about medical costs, for example?
A. Well I used it to do the per-pack value of the settlement, so 62 cents per pack estimate for what $368.5 billion works out to, I just needed the number of packs for that so --
Q. So you divided 62 cents into 368 billion?
A. Well I came up -- I was the one who came up -- I came up independently with the 62 cents, and the way I got it was divide the 368.5 -- well actually I divided the annual payment by the number of cigarettes sold per year, so I needed the number of

packs for that. So I have data on that, backup data like that in this pile. Just background statistics, various articles.

Q. Have you testified in any other case about state medical costs other than Florida, Texas and Mississippi, in deposition?

A. No.

Q. I'm aware of one time that you testified, and it may have only been the submission of a paper, in 1995 to the FDA about youth hazard warnings. You recall that?

A. It was part of a filing then. I submitted some sort of analysis.

Q. Was that a live appearance too, or just the paper?

A. Just the paper.

Q. And that was the comments of Brown & Williamson, Liggett, Lorillard, Philip Morris, R.J. Reynolds and The Tobacco Institute.

A. It was part of some big packet that was submitted, yes.

Do you have the date on that?

Q. Sure. December 1, 1995. Does that seem reasonable?

A. Yes. That's right.

Q. Let me show you that document that's been furnished to us. Does that appear to be your comments?

A. Yep. Yes, these are mine.

Q. And this was part of a larger packet of information submitted to FDA that had to do with regulations restricting the sale and distribution of cigarettes to protect children?

A. That's correct.

Q. Other than this submission and whatever may be listed in the more updated version of the CV, have you either presented in writing or in person any other testimony or views about cigarettes, hazard warnings and so forth to any governmental entity?

A. Environmental tobacco smoke, I testified before OSHA in a public hearing, and I was a consultant to the U.S. Environmental Protection Agency.

Q. Same subject?

A. Same subject.

Q. When was the OSHA appearance?

A. Two or three years ago.

Q. And EPA?

A. More like three years ago. I think it may be on my CV.

Q. Okay. With regard to the FDA submission in '95,

were you paid for this work by the tobacco companies?
A. No, I was paid by Ernest Gellhorn.
Q. Who's that?
A. He's a professor I believe at George Mason Law School and he's -- works as a lawyer on the side.
Q. For whom?
A. For the tobacco industry. I'm not sure whether it's Covington & Burling. He's affiliated with some law firm that does work for them, and he was the one who paid me.
Q. The essence of your views as expressed in this December '95 submission to FDA, was that all of the changed warnings that were being considered at that time to deter adolescents and children from either cigarettes or smokeless tobacco products would not have the desired effect?
A. Could actually lower risk beliefs, if that's their intent, to influence risk beliefs.
Q. Or if the warnings had little jagged edges around them that might actually be appealing to young people. That was one of your views.
A. That's correct.
Q. I didn't notice in reading it, though, any suggestion by you as to what, in an affirmative way, should or might be done to deter children and

adolescents from smoking cigarettes or from using smokeless tobacco. Did you have a view about that?

A. Well I've always recommended that cigarettes be restricted to adults, the smoking of cigarettes be restricted to adults and that just simply involves enforcing requirements that stores sell to adults. So you have better enforcement, but that's not what this rulemaking was about. I was only commenting on the content of the rulemaking.

Q. Well the rulemaking had to do with proposed warnings and changes in the format, the color, the borders, the words, the warnings; right?

A. That's right. They did not have to do with retail sales, to the best of my knowledge.

Q. And did you have a view at the time that you prepared this in December of '95, as to what might be done from a warnings standpoint to deter children and adolescents from cigarettes and smokeless tobacco products?

A. I hadn't tested it so I didn't offer any new views, but generally I think the government can explore mechanisms other than warnings to achieve its desired objectives. So I've testified in other contexts that on-product warnings are not the only mechanism the government should avail themselves of.

Q. What else might they do?
A. Public-education campaigns from an informational standpoint, or in this case you could have restrictions on the purchase of cigarettes by minors, which -- or -- is part of the proposed settlement.
Q. Anything else in the arsenal of deterring children and adolescents from smoking that you can think of?
A. Well there are lots of things you can do, but the key is that you want to deter children but you don't want to penalize smokers as a group. So raising the price of cigarettes deters children, but it also puts a burden on smokers who typically are low income and poor. So it's a very regressive way to direct an attack on youth smoking, so ideally you want a selective policy instrument.
Q. Does the array of policy instruments include the manufacturers of cigarettes and smokeless tobacco products doing anything themselves as distinguished from what the government might do to deter children and adolescents from smoking?
A. Well you could undertake public-education campaigns like the beer industry has done, "don't drink and drive." I'm not sure how effective those are, but that's the kind of thing you could do. I

think everything gets complicated by the fact that you have on-product warnings mandated by the government so you already have a very complicated informational apparatus in place.

Q. So other than an industry campaign along the lines of "think when you drink," which is the alcohol industry, the beer industry's campaign, can you think of any other things that the tobacco industry might do in an effort to deter children and adolescents from cigarettes and smokeless tobacco products?

A. You know, it's tricky. Let's say you had a revered figure for adolescents, Arnold Schwarznegger gets up there in the ad and says, "kids, you know, don't smoke cigarettes now, wait until you're 18," I'm not sure if that would have a positive effect or a negative effect, you know, because you're indicating that, you know, smoking's a grown-up activity and that's how you can aspire to be like Arnold. So I think this is a tricky business, designing a neutral campaign.

Q. "Neutral" in what sense?

A. A campaign that truly has the desired effect of decreasing youth smoking without harming adults who choose to smoke.

Q. At all times in your consideration of these

issues you balance, do you not, the effect on smokers and their rights to smoke and have access to smoking products against perhaps the public health or public issues having to do with nonsmokers? You always balance that, don't you?

A. Most of these things don't involve a trade-off. To the extent the balancing comes up, it's with respect to public smoking restrictions where there is a public health estimated cost that you could compare with the lost smokers, but my Smoke book involves very little by way of trade-offs that I discuss.

Q. Taxation is a trade-off, involves a trade-off.

A. Higher taxes decrease your ability to buy the product.

Q. In preparing the submission to FDA in 1995, did you consider the extent to which cigarette firms' advertising is either directly or indirectly targeted at children and adolescents?

A. I didn't ignore that concern.

Q. What conclusion did you reach about it?

A. Certainly at the time I'd seen no firm evidence that it was targeted at children. I think with all these products the people who are your initial consumers are going to be the young twenty-somethings, so you're going to want to appeal

to younger elements of the consumer populous than the baby-boomer generation. So for the same reason that TV shows get cancelled because the median age of the viewer is 45 as opposed to 23, you would also want to target people closer to the earlier stages of their adult lifetime.

Q. Had you finished?

A. Yes, I'm done.

Q. Since 1995 when you wrote this, have you seen any evidence of any kind to indicate that cigarette advertising is directed at children, people under the age of 18?

A. No.

Q. Have you seen, in conjunction with this work in 1995, any documents from any tobacco company, any of the ones listed for whom you did this work, that indicate that in fact the cigarette companies have a keen interest in the smoking habits of people under the age of 18?

A. Well a keen interest is not the same as wanting to foster it, but I have not seen any such documents.

Q. Are you aware that they have a keen interest in people under the age of 18 from any source?

A. No.

Q. Would it surprise you if they had such a keen

interest, from an economic standpoint?

A. They might want to know about everybody who smokes at all ages. That wouldn't surprise me.

Q. If some of the firms, at least for whom you did this work in 1995, spent money to research and study the habits of people below the age of 18 down to 12 and even younger, would that be inconsistent with a view that is expressed, at least in your paper, that young people shouldn't smoke, people under 18 shouldn't smoke?

A. Studying it is not inconsistent with that view, no.

Q. From an economic standpoint, would a business expend money in the research or study of a particular topic if it didn't somehow relate to that company's business? Would that make any economic business sense?

A. They might be curious. Certainly since it's in the air in terms of government policy, and as we see today in the air in terms of litigation, they might be interested in keeping tabs on what's happening with that population group.

Q. And that would be a legitimate objective of their business --

A. Yes.

Q. -- from an economic standpoint.
A. From an economic standpoint you want to get information that's going to inform you about things regulators care about.
(Discussion off the record.)
(Recess taken from 10:44 to 10:57 a.m.)
BY MR. SILBERFELD:
Q. Counsel has furnished us a copy of your vitae. It actually comes in two parts, one is the vitae itself and the other is the bibliography dated August 18, 1997. I'd like to have this marked as next in order.
Is this a true and correct copy of the current vitae?
A. There are some typos and changes, but this is the current one in my files back in my office so --.
Q. Understanding it's always a work in progress.
(Discussion off the record.)
(Plaintiffs' Exhibit 3808 marked for identification.)
BY MR. SILBERFELD:
Q. Let me ask you about a couple of these articles, if I may. The one listed at the bottom of the page under -- the bottom of the first page under "Principal Awards," which also appears in the

bibliography I'm sure, is the paper in Economic Inquiry entitled "The Quantity - Adjusted Value of Life." Do you see that article?

A. Yes.

Q. What is the essence or the theme of that article?

A. Well I had earlier estimates estimating the value of saving a statistical life in the workplace from the standpoint of the workers, and what these estimates do is take into account the age of the worker to, in effect, make a quantity-adjusted calculation of the value of life.

Q. Is this the private cost of a life or the external cost of a life?

A. It's the private value to prevent your own death, so it goes beyond healthcare costs, medical costs and lost earnings. It's the value of risk prevention.

Q. To the person, not to society.

A. That's correct.

Q. I saw one paper that you wrote, and there may be others, about the concept of altruism. Do you recall that?

A. Yes.

Q. In 1988 you wrote a paper that dealt with the

topic of altruism. Define that term for me --

A. Well in the risk context --

Q. -- in the economic or risk context.

A. -- altruistic concern would be where you were willing to pay for a risk reduction to others.

Q. Would that be an external cost resulting in an external benefit to society rather than a private cost with a private benefit?

A. It would not be a tangible external cost but it would be labeled an economic cost, yes.

Q. An economic cost that was external to the person whose life was being saved?

A. Yes.

Q. As I recall that article, it dealt with a hypothetical that was surveyed to a group of people in North Carolina. Do you recall that?

A. We also did other states as well, but North Carolina is the one we reported -- well we surveyed them about reducing risks in a variety of states, but we reported the results from North Carolina.

Q. Okay. Hypothetical was an insecticide, as I recall, where the questions were asked would you support the idea of spending money to prevent an inhalation of this insecticide fume, or I think it had something to do with skin contact as well. Is

that a fair characterization of what the hypothetical was?

A. This one may have been studying poisoning risks. I forget. Was it a poison-prevention program?

Q. Let's not guess.

MR. SILBERFELD: Let me mark as next in order a paper by you in the Journal of Policy Analysis and Management, 1988, entitled "Altruistic and Private Valuations of Risk Reduction."

(Plaintiffs' Exhibit 3809 marked for identification.)

BY MR. SILBERFELD:

Q. Let me show you Plaintiffs' Exhibit 3809, Mr. Viscusi, ask you if that's at least one of the papers that deals with the concept of altruistic value.

A. It is.

Q. And is that the -- the one that involved the insecticide hypothetical in North Carolina?

A. Yes.

Q. And let me have it if I may. Go ahead and look at it if you wish.

A. I was going to try and figure out what the --

Q. Sure, go ahead.

A. Okay. I've figured out the content. (Handing.)

Q. The question under study in this paper was what, sir?
A. Whether people were willing to pay for a poison-prevention program above and beyond the effect to themselves.
Q. And you ask certain questions of, it looks like, 785 consumers and you determined that the role of altruism may be sufficiently consequential to give it a dominance rather than a subsidiary role in policy analyses.
A. If you believe our numbers, it could be a big deal. Altruism in nonuse values have been controversial, and the Office of Management and Budget, for example, views them as sufficiently unreliable that they don't want to count them. So this was the first paper that suggested they could be big. Other people suggested that they're considerably smaller.
Q. Are you familiar with the work of Johansson?
A. Magnus Johanneson?
Q. I think it's Per-Olav.
A. Per-Olav Johansson?
Q. Yes, Johansson.
A. Is this the work published in my journal?
Q. Yes.

A. I have some familiarity with it.
Q. Do you agree with the conclusions of Johansson as it relates to altruistic value?
A. I don't even remember their conclusion. What is it? They found that it was big?
Q. Well not the size of it but the significance of it at all. Do you agree or disagree with --
A. I don't even remember their conclusion. I handle a hundred papers a year, at least, for that journal.
Q. What is the concept of safety-focused altruism?
A. Well that would be altruism based on safety concerns as opposed to altruism based on welfare concerns, so I could be concerned with your economic well-being from an income standpoint that would be different from being concerned with how safe you are.
Q. Is the paper that you authored with your other authors in 1988, Exhibit 3809, about altruism in a welfare sense or in a safety sense?
A. Both, but it's -- the welfare is derived from the safety effect.
Q. And the conclusion of this paper was that people would in fact pay some amount of money to preserve the safety or well-being of people other than themselves; that is, other members of society.

A. Yes.
Q. And you calculated that, based upon population figures, as being in the range of 10 to $18,000 per injury depending upon whether the injury was to an adult or to a child; right?
A. I don't recall the exact numbers but --
Q. Let me just mark -- That pen mark there is I think the conclusion.
A. That's what -- 10,000, 18,000 are the numbers.
Q. What is the significance of the 10 to $18,000 from a societal or external cost standpoint, based on the results here?
A. Well if you have a hundred million households in the United States and each of them is willing to give a penny for something, then you can raise a million dollars in terms of a value. That would be the analysis based on one good cause.

The controversy in the literature is whether you can get people to say I'll give something to any good cause, number one, that shows up, and this is hypothetical giving, not real money, and it's for one good cause, and if you tell them about lots of good causes will they still have a deep pocket.
Q. What do you mean by that?
A. Well this paper showed that people were willing

to kick in for a poison-prevention program. What if I told them here are 20 good things you could do; save the Snail Darter, eliminate pollution along the Eno River, reduce climate change and go -- decrease fatality rates for children in school bus accidents. Here are 20 good causes, now how do you feel about this cause X? So the context of other giving opportunities could affect the results, and that's been a theme in the subsequent decade of research on this, as well as the fact that this is not real money, it's hypothetical money.

Q. Are the conclusions you reached, by your own estimation, no longer valid?

A. We have not pursued this topic on altruism. We're doing rebuttsness tests now with respect to an analogous effect, which is nonuse values for natural resources. So you value clean lakes, rivers and streams even though you don't use them. And what we're finding is that the framing of the question and the presentation of different alternatives can affect the answers, but this was the first foray in the literature ever into altruism so that as a first effort I think -- I still think it's pretty good, but we never recommended the EPA use these numbers for policy. In our report to EPA, we had a caveat that

they should not be used for policy.

Q. Are you familiar with the work of Jones Lee?

A. I've published that in my journal as well, and I've refereed some of his work on altruism.

Q. And Jones Lee comes to a similar conclusion, isn't that true, about altruism value that is values external to the private costs?

A. Well except he also says that you shouldn't double count the altruism, so that if I'd given you money instead of a risk program, that -- you may want to do that comparison, which is a better way to make you better off, donating a dollar to a poison-prevention program, for example, or donating a dollar for income support.

Q. Based upon your work in the '88 paper, would it be fair to conclude that this sample of individuals concluded that an injury prevented had an external value of 10 to $18,000 if it was an adult or a child?

A. That's what the sample said, yes.

Q. Do you regard that, from what you know from that time up to today, as being a reasonable range of the altruistic value of an injury prevented?

A. I view this as exploratory work. I have not done work to pinpoint a reasonable range that EPA actually would use for policy. I'd want to do more

sensitivity analyses that I did not do then because the state of the art in the field when we did this study was not as well developed. There had not been any studies of this character up to that point. There have been lots of studies since then, and you learn from these studies.

Q. And what have you learned from these studies about the range of altruistic values for an injury prevented?

A. Mostly we learn how to do surveys about commodities that you're not actually purchasing in the market, and what we've learned there is the presentation of alternatives and indicating that there are alternative ways people could spend their money and the context of the survey can greatly affect responses. That's one example.

Q. Anything else about the actual values?

A. Well you don't know if interview money is real money and I now have other techniques that I use in terms of survey structure to try and get at these answers.

Q. How does the altruistic values in your '88 article about an injury prevented compare, if at all, to the value of life lost? There's literature about that, is there not?

A. Yes.
Q. How does that compare, if at all?
A. They're smaller.
Q. In terms of comparability; that is, comparing an injury on the one hand to a death on the other, do you regard the figures as comparable?
A. Injury altruism values are much smaller than the value-of-life numbers. I have no estimates of the altruistic value of life, explicitly. So I have values of lifesaving programs, but those did not differ from the private valuations, so in my analysis of government lifesaving programs, I couldn't find a difference between people's valuation of public programs to save lives and private valuations.
Q. In terms of the altruism literature today, roughly 10 years after your seminal article was published, what would be the range of value for an injury prevented based on your understanding of the literature?
A. I don't know. I don't know what the range would be. I don't think anybody's nailed it down. I view all the studies out there as pretty exploratory.
Q. Well what are the studies reporting in terms of the altruistic value of an injury prevented?
A. I have -- I actually don't recall so I'd have to

look at the particular studies and their methodology. So there haven't been that many studies. I don't think there's been any other studies in the United States as far as I can tell.

Q. The work that Jones Lee did was in England, as I recall?

A. That's correct.

Q. And any reason in your mind not to refer to or rely upon that work as a basis for assessing the altruistic value of an injury prevented?

A. I've never relied on his work for any other numbers I've used, I've always done them myself. So if I were to get into this topic, I'd develop my own numbers.

Q. In your report to us you indicate, under the methodological issues in calculating costs, in the second paragraph of that page, that you advocate a longitudinal lifetime approach to analyzing the cost associated with smoking. Right?

A. That would be the ideal, yes.

Q. Should there be within that analysis an altruistic value component for injury prevented or lives saved?

A. Not within the context of the insurance costs of smoking.

Q. How about in the longitudinal lifetime approach to analyzing all the costs associated with smoking, and the benefits?

A. Then you get into the value to smokers being able to smoke, their consumer surplus that they reap from smoking. I don't think that's what any of these cases are about.

Q. Has any model that you're aware of ever included within it an altruistic value for an injury prevented?

A. None that I know of.

Q. Or a life --

MR. ATKESON: Can I just ask you to clarify? When you say "any model," you mean a damage model for any of these cases?

MR. SILBERFELD: Yes.

A. Not that I know of.

Q. You understood the question that way?

A. Yes.

Q. An altruistic value for a life saved or a value-of-life component.

A. Well I haven't seen any of these models other than the ones in the literature, so none of the published studies and none of my studies include that.

Q. In trying to have a lifetime model of all of the costs and all of the benefits of smoking, one would want to include some value for the injury prevented or the life saved; isn't that true?

MR. ATKESON: Just a clarification. Costs and benefits to whom?

MR. SILBERFELD: Society.

A. Is this a social-welfare calculation?

Q. It's a calculation.

A. Well is it trying to determine the insurance costs of smoking, the financial costs, or is it trying to determine the net implications of smoking for social welfare? If it's the latter, you would include externalities, but you would also include the value in welfare gained to smokers of their smoking behavior. Everything matters.

Q. When you say "include externalities," two of those externalities would be altruistic values of injuries prevented and lives saved; true?

A. They could be. I think there's a real debate as to which altruistic values should count, so to what extent are you altruistic or are you paternalistic in trying to impose your preferences on others?

So I may derive substantial disutility from seeing you in a white shirt, it bothers me very much,

and it bothers me much more than you derive a benefit from wearing a white shirt, but as a society we do not prevent you from wearing a white shirt even though I suffer a $200 loss when you wear it and you only reap a $100 benefit when you do. So there is a substantial debate over to what extent other people's views of your actions should be recognized in a democratic society.

Q. Putting aside whether the issue is paternalistic or altruistic, if we were trying to assess all of the costs and benefits surrounding smoking and the effects of smoking, one would certainly want to include some value for an injury prevented or a life saved; isn't that true?

A. Well the lives affected and the injuries are private costs, and to the extent that they're already subsumed in the private decision you would want to kick up the price of cigarettes that people pay to recognize the fact they would have been willing to pay more for a completely safe cigarette, so it's a much more complicated thing than what you're suggesting. It's not just throwing in an extra cost number. You have to completely rethink what you're doing. And it's not what these cases are about.

Q. In assessing the true and complete costs and

benefits, putting aside the private costs, one would want to include among the externalities an altruistic value for an injury prevented and a life saved, among other things. Isn't that true?

A. Depending on what the -- the character of this altruistic value is.

Q. If it's truly altruistic and not paternalistic, one would want to include it; isn't that true?

A. I'm not sure we can make what we -- a judgment as to what we mean by that "truly altruistic," so I don't think that's that clear. So, for example, because I'm more affluent than a worker on a low-risk job, I would never -- a high-risk job, I would never want to work on such a job, that's just a difference in preferences because I'm richer than that worker. Should that altruism prevent that worker from taking that job because it's a job I would not want to take? I'm not sure that income-related differences, for example, should matter. So I think it runs throughout all the altruism discussion. It's very difficult to disentangle which forms of altruism matter, and for that reason no government agency includes altruistic concerns in any of its risk assessment, and I see no reason to depart from either government agency practice or the recommended

practices for the U.S. Government by the U.S. Office of Management and Budget.

Q. So your paper in 1988 is really a dinosaur; right?

A. No. It's an exploratory analysis and we don't know the answer yet. And until we do a better job of figuring out the answer, you wouldn't want to run with these numbers.

Q. If it was part of your charge to come up with an altruistic value for an injury prevented or a life saved, what figure would you use to do that?

A. Well the lives saved, I couldn't find one.

Q. Okay.

A. So I looked at public --

Q. How about just injury prevented?

A. Lives are bad injuries, and they're injuries that kill people, and looking at fatalities, automobile fatalities and automobile-fatality-prevention programs, I could not distinguish a difference in value for a public automobile prevention program from the private valuations people have for just affecting risks themselves. So in that context, I couldn't find an altruistic value. So I think it varies a lot depending on the survey structure and the format of the survey, which is why

there's so much skepticism about running with these numbers and why no government agency does. They're just not used.

Q. The Journal of Policy Analysis and Management where this altruistic paper was published, is it a peer-reviewed journal?

A. It's peer reviewed and it's the official journal of the public policy association, all the public policy schools.

Q. If it stands alone, let's assume there is no other literature out there in the nine years since it was published, do you believe that the figures quoted in the paper would be reasonable figures representing the altruistic value of an injury prevented in terms of the external component of it?

A. No.

Q. What is a reasonable figure?

A. We don't know, and even at that time we didn't know. We indicated to EPA that these are very exploratory results. This is based on a larger report to EPA. We did not recommend them used for policy.

Q. You told EPA something about whether to use altruistic figures in policy making?

A. We have a report to EPA, and we had a caveat to

the report that these are, you know, very exploratory estimates. We have a caveat to the report we're doing now to EPA saying we're looking at two states, we're going to be looking at Colorado and North Carolina, it would be interesting to know, but you're going to have to do a different study if you're ever going to do anything real.

Q. When in relation to the publication of the paper did you make this report to EPA?

A. It would be before the publication of the paper.

Q. And you told the EPA that altruism, as we've defined it here, should not be part of policy analysis?

A. No. We said this is an interesting, novel aspect to our work that we explored, but we regard this as exploratory work. In fact, one of the three principal investigators on the project -- Ann Forest, was just a research assistant at the time -- did not put his name on the paper even though he designed the altruism question, because he viewed it as very soft. So the person who drafted the question did not want his name on the paper.

Q. The person who drafted the question put his name on the article, though?

A. No, he's not on the article. So the person who actually drafted the altruism question that's being tested there did not put his name on the article.

Q. And who was that again?

A. Joel Huber, marketing professor.

Q. Oh, I'm sorry.

A. He was part of our study.

Q. After you told EPA that altruism was an exploratory idea or a possibility, you published this paper; right?

A. Yes.

Q. And in the paper you conclude by saying, "Altruism does, however, appear to be of sufficient consequence to emerge from the regulatory analysis footnotes and to become an integral part of such policy analyses."

A. Yeah, it could be a big deal, we don't know. What we were doing is trying to make a pitch for more funding.

Q. So -- So this was a marketing piece.

A. This was a marketing tool, yes. Not a successful one, but it's a marketing tool.

Q. In terms of altruistic value today in 1997, based upon what you know and this early work in 1988, is the external value to society of an injury

prevented a thousand dollars?

A. I don't know.

Q. A dollar?

A. I wouldn't even want to hazard a guess.

Q. A million dollars?

A. I would expect the altruistic value would be less than the private value, so I've written that in the past, that the private value should dominate the altruistic value, that's why you should use the private value.

Q. And what are the private-value figures from your own records?

A. For an injury or death?

Q. Injury.

A. For a lost-workday job-related injury, 20,000 to $50,000, something in that range. But this is the value of preventing it beforehand. That's not the value you'd want to assign for compensation.

Q. After the fact.

A. After the fact.

Q. Right. So the private value of injury prevention from your own work is in the 20 to $50,000 range?

A. That's correct.

Q. And what about for death?

A. Three million to seven million dollars. But that's for the death of a worker of the typical age of a worker. So it's an acute accident to a worker, it's not the death of, let's say, somebody who's had acute respiratory disease and air pollution shortened their life by two months. Their death would have a different quantity of life that was lost associated with it.

Q. This is a traumatic, acute death --

A. Yes.

Q. -- that's contemplated by the three to seven million dollars?

A. That's correct.

Q. And in terms of altruistic value, the only thing you can tell us is that as far as the injury component goes, the altruistic value of an injury prevented would be something between zero and 20 to $50,000?

A. For an injury or death?

Q. For an injury.

A. Injury. I'd put it in that range, but once again it's not like I have a statistical study to back that up, to pinpoint it.

Q. But that's your impression.

A. That's my impression.

Q. And as between zero and 20 to $50,000, do you have any sense as to where the altruistic value of an injury prevented falls?

A. No, and I should caveat the other answer by the fact that with -- if you didn't frame the survey correctly to indicate that -- that there are other sources for spending the money that you could get a different answer conceivably outside the range if you added up -- come across enough different people. But if they knew the scope of the injuries out there, I think we'd certainly be below the 20 to $50,000.

Q. What's the lower value?

A. I don't know. I'm not going to speculate.

Q. Same question with respect to the altruistic value of a death. Would the range be between zero and three to seven million dollars, as you see it?

A. That would be my expectation.

Q. In 1984 you wrote a paper called "The Lulling Effect: The Impact of Child Resistant Packaging on Aspirin and Analgesic Ingestions." Do you recall the paper?

A. Yes.

Q. What did you mean at the time by the term "lulling effect"?

A. If government agencies label safety caps as

being child proof, parents could be lulled into a false sense of security regarding the safety properties of these caps.

Q. Is "lulling effect" something that affects -- a phenomenon or concept that affects risk perceptions generally?

A. It could affect some risk perceptions so -- I'm not saying it's true generally. This effect is with respect to protective devices, so the context where I've written about it would include safety caps and cigarette lighters. So it's not a general phenomenon, it's within the context of safety mechanisms.

Q. Do you have an impression in your mind as to whether or not lulling effect as a phenomenon plays any role in risk perception about cigarettes or the health hazards associated with them?

A. I see no reason why it should. It's a different class of risks.

(Discussion off the record.)

Q. In December of '88 you wrote an article called "PAIN AND SUFFERING IN PRODUCT LIABILITY CASES: SYSTEMATIC COMPENSATION OR CAPRICIOUS AWARDS?" Do you recall that?

A. That's correct.

Q. If I can generally characterize it, it was a study of product liability claims, about 10,000 or so, from a number of insurance companies; right?

A. Right. That's correct.

Q. The time frame of the claims was in the mid-'76 to '77 time frame and the work was done in '88, and what you were looking at was the relationship between actual expenses associated with injuries and pain and suffering; right?

A. Or the character of the injury and the nature of the liability claim and pain and suffering.

Q. Let me show you page 207 of the article, and I've circled, at the top of that table, a heading that reads, "Claims with Positive Bodily Injury Payments." Do you see that?

A. Yes.

Q. Does that refer to actual out-of-pocket expenses?

A. No, this refers to an actual award. So there was an actual either settlement or court award in which there was a payment for a bodily-injury case.

Q. Unrelated to whether the payment was for medical expenses, lost earnings or so forth.

A. That's correct.

Q. And what is the significance, for example, in

the first highlighted item there? There's a value for cancer of about $25,000, as I recall. What does that mean? Explain that to us in English.

A. If you take the set of cases where people got some money and they suffered a bodily injury, restricting it to that set, 86 percent of the people with cancer got pain-and-suffering compensation, by which I meant they were compensated for more than their economic loss, and their average compensation above their economic loss was $25,642 in 1970 -- mid-1970s prices.

Q. Okay. And then to the right of that there is another part of the table. What does that one refer to?

A. That's where I restrict the sample only to cases where people got pain-and-suffering compensation.

Q. Those are the cases that were won.

A. Cases where they won or where they settled to an amount where the amount of the settlement exceeded the dollar value of the economic loss.

Q. And in those instances related to cancer, the average was 29,000?

A. That's correct.

Q. Using that cancer example and the mean pain-and-suffering awards, do you regard those

figures as being reasonable values related to cost of such injuries?

A. These are what juries did or what people settled for. The question is what do they reflect.

Q. Right. What do they reflect?

A. I think one thing they reflect, which is shared by many of my colleagues, is that they reflect a desire on the part of juries to give people a little extra to cover the cost of lawyers. So if the lawyer's going to take, let's say, a third of the award in compensation for legal fees, then if you only compensate the plaintiff for the dollar value of the economic loss they will, in effect, be undercompensated after the legal fees are deducted. So it's a way to give people some extra above their dollar value of the economic loss to help defray legal expenses. In addition, it could be a way for the jury to recognize nonpecuniary aspects of the loss.

Q. Is it a way for the jury to recognize a nonprivate component of the loss?

A. It's hard to tell what goes through jury's heads, and that's the real problem here is that there's no real guidance for juries as to how they should set pain-and-suffering awards and what should

be their magnitude.
Q. Notwithstanding that, you found, in your studies, that juries do a pretty good job; right?
A. Well I didn't hand them any accolades, but what I did say is that what they did was correlated with the magnitude of the economic loss but it was not just a straight markup of that, and that their awards seemed to be correlated in a plausible way with the severity of the injury so that juries were not as crazy as the extreme critics of juries have suggested.
Q. And notwithstanding the fact that they get no guidelines, they seem to, across many hundreds if not thousands of cases, do justice in a comprehensive and logical way.
A. I'm not sure anything about what they do is justice or comprehensive above it is correlated in a systematic manner in a positive way with the severity of the injury in some respects, and that aspect of their behavior seems to be plausible and in the right direction.
Q. Is one plausible explanation for pain-and-suffering awards that they are compensation for the nonprivate aspects of injuries and deaths?
A. I've never heard about -- heard anybody suggest

that that's the case.
Q. I'm suggesting it now. What do you think of it?
A. Well if the American Law Institute group I was with kicking around what pain and suffering did never thought that that was a role for pain and suffering, I don't think I want to second guess them today.
Q. Can you totally reject that thought as having any plausibility at all?
A. I don't know what's going through an individual juror's head.
Q. You do know that pain and suffering awards have the tendency at least to compensate for nonprivate elements such as attorneys' fees.
A. That's a private element for the injured party, it's not borne by the jurors.
Q. If one were to use the figures in your '88 paper as being altruistic values of injuries, would that be reasonable?
A. No.
Q. Why not?
A. There's no reason to assume that they're altruistic values as opposed to mechanisms for the jurors to compensate the injured party both for legal expenses and for pain and suffering.
Q. Are punitive damages, by nature, altruistic

rather than private, external rather than private --
A. No, --
Q. -- forms of damage?
A. -- ideally they should be related to deterrents. Generally I think punitive damages often are the reflection of irrational jury behavior.
Q. Can you give me an example of that?
A. The railroad case that we just read about last week.
Q. New Orleans?
A. New Orleans. The McDonald's coffee-cup-spill case.
Q. What do you know about that case?
A. I was not involved in the case so I just know what I've read in the paper.
Q. You accept that as true?
A. Well I've read excerpts from interviews with jurors, as well as the testimony that was presented. The fact that the court reduced the award suggests that the judicial system thinks the award was too high.
Q. Well that suggests a judge thinks so, not the entire system of America; right?
A. Well --
Q. Or maybe you do think that.

A. If you don't agree with a judge, you can always appeal it.

Q. In 1990 you wrote a paper in the Journal of Political Economy called "Do Smokers Underestimate Risks?" You see that, sir?

A. Yes.

Q. Was this article based at all in part on the audits and survey data of 1985?

A. Yes.

Q. At page 1254 I've underlined a sentence there in red that says, in essence, that in lung cancer cases smoking behavior is very responsive to risk perceptions in the expected direction.

A. That's correct.

Q. What did you mean by that?

A. The higher the perceived risk of lung cancer, the less likely it is that people will smoke.

Q. Is there a relationship, based on your understanding of the risk-perception literature, between an overassessment of risk and its affect on behavior?

A. People don't know whether they're overassessing or underassessing the risk, but the higher the risk perception, the less attractive behavior will be.

Q. And isn't it true that the literature on risk

perception broadly says that correct assessment of risk probably has no effect on behavior, that people will not change their behavior based upon an accurate assessment of risk?

A. I've never heard anybody say that.

Q. Have you seen literature references that suggest that behavioral change in reference to a particular risk only occurs when the overassessment of the risk is very high?

A. No.

Q. Is the opposite true?

A. No. Behavior can change if the risk perceptions change, but it has nothing to do with the level. It has to do with the change.

Q. And from your understanding of the literature, what are the elements of change that affect behavior, change in risk perception?

A. If risk perceptions go up and you have a severe outcome associated with it, you'll change your behavior. If it's sufficiently desirable for you to change your behavior, it may not be a sufficient increase in the risk perception to get you to change your behavior. Depends on how valuable the activity is.

Q. In this same paper at page 1260 you write, "A

large number of studies have demonstrated a tendency to overestimate low-probability events and underestimate high-probability events." Do you recall that generally?

A. Sure.

Q. What is smoking and the risk of contracting illness from it, is that a low-probability event or a high-probability event?

A. That's a good question.

Q. Thank you.

(Laughter.)

MR. ATKESON: That's his answer.

A. It depends on how you're thinking of smoking. If you're thinking of the act of smoking and the risk of each cigarette or the risk of each pack, then that would be a low-probability event; if you're thinking of the lifetime risk, that's a pretty big lifetime risk, so it depends on which context you're thinking of it.

Q. Let's think about it both ways.

Based on your understanding and your own experience with smokers and their smoking behavior, would it be true that people overestimate the risks associated with a single cigarette, a single pack of cigarettes or a week or a month, a year's worth of

smoking?
A. I've always done lifetime risks, but my hypothesis, which at this point would only be a conjecture, is that if I asked people what's your assessed risk of a single cigarette or a pack of cigarettes that people would overestimate the risk by more than they do for the lifetime risk.
Q. With regard to the lifetime risk, that is a high-probability event in terms of risk, smoking.
A. Much higher than for per pack or per cigarette.
Q. Yes. And people have a tendency to underestimate high-probability events, in general?
A. That's one -- That fact -- Given that one factor, high-probability events such as your chance of dying from heart disease overall, people tend to overestimate that -- underestimate that.
Q. Okay. Other than heart disease, and put smoking aside, can you give us another example of a high-probability event that people underestimate?
A. Dying from cancer, all causes.
Q. That's a high-probability event.
A. Yes.
Q. Okay. What -- What is the statistic on that?
A. I don't have them with me. I have a survey question that I've asked people about this with me,

but I don't have the answer with me. So a lot of people. Less than who die from heart disease, but a lot of people.

Q. Okay. Putting aside diseases --

A. In fact I may have some cancer statistics here.

Q. Sure. Go ahead and look while we're talking.

Putting aside diseases, can you give me an example of a high-probability event that people underestimate the risk of?

A. Here's a lifetime risk of -- Well the annual fatality risk of cancer would be 1 in 300, and that's underestimated by people.

Q. How about a nondisease example, can you give me one?

A. I don't have any off the top of my head. I mean, I've done this recently, ran some subjects through this, but they're all just dots on a graph. I don't remember which are above the line, which below. I'm just -- I estimate the curve and the curve falls below the line which indicates they underestimate the risk when the risk is big, but I don't recall the switch point.

Q. So applying this statement to smoking now, if we're assessing lifetime risks of smoking, you regard that in the first instance as a

high-probability event?

A. A lot bigger than things like being struck by lightning, which people tend to overestimate, so that would be a relatively high-probability event.

Q. And is it true that people underestimate the lifetime risks of smoking?

A. No, they overestimate.

Q. So this statement as it relates to smoking is not true.

A. That's correct, because there are other attributes of the risk that would affect its degree of overestimation or underestimation. One reason why small risks are overestimated and large risks are relatively underestimated is the substantial publicity given to small risks, like being killed by a tornado or by lightning, relative to the magnitude of the risk. In the case of smoking, you have much more publicity and attention and public visibility of smoking hazards than are accorded, let's say, to heart disease overall given the size of that risk.

Q. Well this statement on page 1260 of your 1990 paper about underestimating high-probability events, and we've agreed that smoking is, in terms of lifetime, a high-probability event, refers to your own work in 1985 and '87 in support for that

proposition. Did your 1985 and 1987 work come to that conclusion, that the lifetime risks of smoking were underestimated?

A. No. Smoking was not one of the risks in the study. That study was using data developed by psychologists. I've since done studies with my own data. But this is a general pattern. This is not true of every risk, so some risks, even though they're big, could be overestimated. Some risks, even though they're small, could be underestimated. So this is a -- a correlation, but this is not an ironclad rule. Not everything fits this pattern.

Q. At page 1265 of this paper you say, "An unbiased assessment of these risks would boost cigarette smoking" --

A. Right.

Q. -- "because of the skewed distribution of risk perceptions around the actual lung cancer risk level."

Does that mean that if people understood the actual risks, they would smoke more?

A. Yes, more people would smoke.

Q. So by that measure it would be a good idea for the cigarette companies not to divulge anything that they knew about the health risks of smoking because

to do so would lower the overassessment of risk; right?

MR. ATKESON: Would you clarify from who's perspective you mean it would be "good"?

MR. SILBERFELD: The public's.

A. No, the public's good is served by people making responsible decisions, and if people are not mislead about the risks of smoking but instead had more accurate risk perceptions and were more likely to smoke then that would be good from the public standpoint. The public standpoint is not served by banning smoking, it's served by people making decisions that reflect their preferences given the truth.

Q. So if people knew the truth you would expect, assuming that the behavior was rational, that they would smoke less, assuming that the truth was that smoking caused disease.

A. I -- If people knew the truth they would smoke more, because people now have an exaggerated perception of how risky smoking is.

Q. So that if the tobacco companies this afternoon released information that conclusively established that cigarette smoking causes disease and death, your take on that is that people would rush out and smoke

more.

A. With what probability? So if you say smoking cigarettes is going to kill you, that's a probability of 1.0 but that's not the probability of death from smoking. The probability of death from smoking is much lower than that, based on the surgeon general's estimates, and these estimates, based on the surgeon general's own numbers, are considerably below what the public believes the risk to be.

So if you tell the people here's the truth based on what the surgeon general's calculations say, although the surgeon general has never converted this to a probability, then more people would smoke if you convinced them of that fact.

Q. So if the tobacco companies this afternoon came out and conclusively convinced the American public that the risks were exactly what the surgeon general said they are, more people would rush out and smoke because the risk perception would go down.

A. Yes. Although here I'm also assuming that you convert the surgeon general's estimates of the death toll into a probability so that people could understand. The surgeon general has not done that.

Q. Well the surgeon general has established a relative risk.

A. Why not tell people the absolute probability. What are you hiding?

Q. Well, how would you do that? What's the absolute risk?

A. Well if the risk is, let's say, 1 in 3, to take one example, why not tell people the risk is 1 in 3? Why tell them the relative risk of lung cancer is much higher, which deceives people because people don't understand the baseline probability.

Q. Why don't the tobacco companies do that?

A. I don't think they're permitted to go out there and be spokespeople on the risk probabilities.

Q. Why not?

A. I don't think the reaction of the government agencies would be that good to them going out and saying, look, the surgeon general's misleading you, the risk is one chance in three of death or whatever it happens to be based on the surgeon general's estimates. They never report the denominator, but here is the denominator, here's what the risk is. I don't think they're allowed to do that. I think that's one of the reasons.

When I did this filing one thing I pointed out for the FDA is if they went out and said one in three, and that was one of their proposals, to go out

and say one in three, that it would lower risk perceptions. They didn't do it. Why didn't they do it? I don't know. Why don't any government reports? There's not a single surgeon general's report out there that gives you the probability of death, the absolute probability of death or the probability of lung cancer associated with smoking. Why don't they tell people the truth? I don't know.

Q. Are they lying to the American people?

A. No, they're not lying. They're providing information that they think is designed to foster high-risk perceptions. They have an agenda.

Q. What's the agenda?

A. To increase risk perceptions.

Q. Why?

A. Because they oppose smoking.

Q. Who does?

A. The surgeon general.

Q. On the basis of what?

A. On the basis -- I don't know why the surgeon general does it or the surgeon general did it.

Q. You don't think the office of the surgeon general should oppose smoking?

A. I think any government official should promote the welfare of the citizens, and that if your agency

has a special mission you should not override other aspects of things that affect people's welfare. You should be concerned about their total welfare, not about whatever particular mission your agency has.

Q. Is the public welfare served by reducing the incidence of smoking in this society?

A. No. Public welfare is served by people making more informed choices about smoking.

(Luncheon recess taken at approximately 12:01 p.m.)

AFTERNOON SESSION

(Deposition reconvened at approximately 1:08 p.m.)

BY MR. SILBERFELD:

Q. Just to round out what we were talking about just before the noon break, I'd asked you whether the public welfare is served by reducing the incidence of smoking and you said, I think, in substance, that the public welfare is served by informed choices about risk.

A. That's correct.

Q. If informed choices about risk result in an increase in smoking by the public at large, does that serve the public welfare, in your view?

A. It would serve the social welfare of the United States, yes.

Q. Does it serve the public health of the public at large?

A. Well we care about more than one attribute, we care about individual welfare, so abolishing every risk-taking activity promotes health, whether it's flying an airplane or driving a car, but it's not necessarily something we want to do.

Q. Would an increase in the amount of smoking in this society serve the public health?

A. Increased smoking would result in increased health effects, adverse health effects for smokers.

Q. How about for nonsmokers?

A. I think it would have a very small effect on nonsmokers. I'm not sure if it's statistically significant, but it wouldn't be big.

Q. Is it your view that the case for environmental tobacco smoke has not been made?

A. There is two sets of estimates regarding the risks of environmental tobacco smoke. One pertained to lung cancer, which had been the most hotly debated, where there have been the most studies. Some are statistically significant, some are not. Then you essentially have one study that's been repeated for heart disease where there are more caveats that you can shake a stick at in the article. I'd say this is something where scientific knowledge is still evolving, but if you have a situation where you have nonsmoking areas and segregate smokers, then it ceases to be a policy issue.

Q. That assumes, does it not, that the segregation of smokers from nonsmokers is effective in curbing secondhand or sidestream smoke from getting to the nonsmoking person.

A. Or it prevents enough of it so that there's not a significant risk. So my general sense, my prior is that one whiff of cigarette smoke is not going to increase your probability of cancer. The body is tough enough to withstand one whiff of cigarette smoke.

Q. As a matter of policy, if the true effects of secondhand or sidestream or environmental tobacco smoke are not known, would it be good social policy, in your view, to allow an increase in the amount of smoking across the board?

A. The fact that something is not known with precision shouldn't either encourage or discourage you either way with respect to the policy. You'd want to act on the best scientific judgment at that time and make a decision based on that scientific evidence.

Q. In the Journal of Economic Literature, '93, you wrote a paper entitled "The Value of Risks to Life and Health," and at pages 1926 and 27 there are two tables, and what I've done is marked the implicit-value-of-life portions. Have I done that --

A. Yes.

Q. -- correctly?

And then at the left-hand margin I think I

highlighted the particular papers that you authored that referred to implicit-value-of-life figures.

A. That's correct.

Q. What does the term "implicit value of life," as it's used in this paper, mean?

A. It is the value of a statistical life. So in this case, for a worker, the implicit value of life represents the workers' trade-off between wages and fatality risk on the job.

Q. Is it a private cost or value, or is it an external or social cost?

A. It's the value the worker has where to the extent if the worker takes into account the losses others will experience and thinks about those losses when making the job choice, they would be factored in.

Q. So that there would be in this value an amount, however large or small, that is external to the worker himself or herself?

A. Most people suggest that the household welfares such as the effect on one's family and relatives would be factored in. It might be harder to make the case that, you know, somebody 2,000 miles away who a worker doesn't know, that person's preferences would be factored in.

Q. How about the community's preferences in which the worker works?
A. To the extent that the worker has a sense that the community cares about the worker and would miss the worker, the worker could take that into account.
Q. And do you have any evidence to indicate what proportion of the total life value that people ascribe to the statistical value of the life is made up of that sort of community value or societal value?
A. No.
Q. Any percentage at all?
A. No. I have other estimates where there's public lifesaving activities and public lifesaving activities have the same value as these private ones, so there's no statistically significant difference.
Q. What are the public lifesaving values that you're thinking of?
A. Improved automobile safety or highway safety, which would decrease traffic accidents for everybody, not just the individual.
Q. And are those values in the same ranges of the values reported here, something on the order of three to seven million dollars on average?
A. Yes.
Q. And would that represent, in those studies that

you're referring to, the societal value of a life statistically?

A. Including the value to yourself of improved highway safety. So it's the value to yourself plus the value to other people.

Q. And in those studies that you're thinking about is there any split or breakout as between the value to one's self and the value externally?

A. No, we didn't break it out.

Q. Do you have a hunch or an impression as to what that breakout is?

A. No, didn't try. But since that number's the same as the private value, you can't distinguish the two. It doesn't look like you get much of an added kick from the societal value.

Q. Because the numbers are the same?

A. The numbers are the same.

Q. So you think that even though the survey was posed as asking for both private and societal value, in fact what you got by way of response was a private value?

A. We got a number that was not distinguishable from the private value.

Q. Was any probing done in those surveys to see whether one could ferret out what was regarded to be

the societal value?

A. We didn't try to split it out so we just valued the whole package.

Q. If one wanted to try to place a societal value on life based on your paper and the other study that you're thinking about, what would be a reasonable range of the value of a statistical life?

A. I use three to seven million dollars for a person with the same demographic background as a worker killed in a fatality.

Q. In 1994 you wrote it looks like a book chapter, really -- maybe it isn't, maybe it's an article -- called "Cigarette Warnings: The Perils of the Cipollone Decision."

A. It was a journal article.

Q. Journal article. This was in which journal, sir?

A. The Supreme Court Economic Review.

Q. And it was 1994?

A. I believe so.

Q. At page 244 you're talking about the accuracy of risk perceptions in that article. One of the things you say, and I'll be happy to show it to you, is, quote, "Firms should not be responsible for performing a general educational function. For

example, manufacturers of cars need not inform consumers how to drive or indicate that driving is dangerous. Rather, the only obligation of the manufacturer is to convey information with respect to risks that consumers are unlikely to be aware of based on personal experience or general public knowledge. Idiosyncratic information about a product would be one type of risk information that would be useful."

Would you like to see that?

A. That sounds reasonable.

Q. Sounds like your words?

A. Sounds like my words as opposed to some student editor's words.

Q. Okay. In the context of cigarettes, can you think of an idiosyncratic piece of information that the companies might know that government or the public might not know that would be useful in terms of risk assessment?

A. Yes.

Q. What?

A. With the Premier cigarette, the companies knew that it was a safer cigarette, the government did not know that, they were not involved in the design of it. People didn't know that. That would be private

information.
Q. Any other examples you can think of?
A. I don't have any other information that -- concrete information to give examples.
Q. Okay. The -- The risk assessment that you've done started with the audits and survey information in the middle '80s and has come forward into 1997 with the most recent audits information, and the overall conclusion you reach about that is that people overassess or overstate the actual risks of smoking; right?
A. That's correct.
Q. Is there any survey information one can draw on that would tell us what the perception was of people in the 1950s on the same subject?
A. Nothing of that character. I reviewed the historical Gallup poll data in my book, but we don't have any precise quantitative questions of that nature for the 1950s.
Q. Is it fair to say that people's perception of the risks and hazards of smoking in the 1950s and '60s and '70s is lower than their perception of the risk in the 1980s and 1990s?
A. I don't know about the perception, but I do know in terms of the qualitative questions, there was less

social activism, there was less of an anticigarette climate in terms of policies people were willing to support. That's probably the starkest change. So the increased willingness of people to support banning of smoking in public places, for example, has changed substantially. There's also been some change in some of the qualitative-risk-perception questions. Is smoking a cause of lung cancer? Those answers have changed over time.

Q. And there have been more positive answers to that question, for example, in the '80s and '90s than in the '50s and '60s and '70s; true?

A. I'm not sure if they kept on asking the question in the '90s, but over time there was an increase in the positive responses.

Q. And that increase was significant over time; right?

A. I don't know if it was statistically significant or big. I know it went up. It's a question of what it means. So if people had always been asked a quantitative-risk question, we would have had a better yardstick for assessing what happened, since the trouble with the questions they ask, is this activity risky or does this thing cause cancer, whatever, this is a question with a -- it's not a

well-defined quantitative metric. And I've done a study that's forthcoming in Management Science which shows that such qualitative questions vary depending on what your reference point is.

So more college-educated people, more affluent people have a different reference point for an objective risk before they will label something dangerous. So if reference points changed over time, then that could account for shifts in the qualitative responses. So generally I don't like them much at all. I prefer my quantitative questions.

Q. Do you believe that the reference points with respect to the risks of smoking have changed over time?

A. I don't know. I don't know what people are thinking. Certainly I think people are much more concerned with smoking as an issue in 1997 than they were in the 1950s. This is a front-burner policy issue right now.

Q. Well in terms of reference points, one reference points -- one reference point, rather, for the public would be what the government thinks; right?

A. That's a good start.

Q. Another is what medical science thinks; right?

A. Right.

Q. Another might be what cigarette companies think or publicly say.
A. In terms of a reference point?
Q. Yeah.
A. I'm thinking of "reference points" in terms of how they would answer the question not in terms of what they're drawing upon to answer the question.
Q. Okay. I misunderstood your meaning when you used the term "reference point."

If the source of information that people rely on markedly changes from one decade to three decades later, one would expect there also to be a concomitant shift in their assessment of risks; right?
A. If the character of the information changes and it's different from what people were thinking already, yes.
Q. And with respect to the people who were suffering smoking-related illnesses in the 1990s and in the 1980s, you understand, do you not, that they didn't contract that disease from smoking a cigarette in the 1980s or 1990s, it was a cigarette and an exposure that started many years before.
A. There's usually a lag time before the onset of these chronic diseases.

Q. And that's referred to as "latency" typically; right?
A. Yes.
Q. And latency for cancer can be in the 30-year range.
A. Could be big, could be as little as 10, depends on the individual. I've seen ranges of estimates.
Q. So would it be fair to say that the survey information about risk perception that you rely on would be meaningful for the population of people that will have disease sometime 10 to 30 years from now since they're being currently evaluated in these surveys?
A. Well the 1997 survey would be pertinent to the views now and the diseases that are going to happen in the future.
Q. In the year 2007 to 2027, roughly.
A. If there's that kind of lag. We have the 1985 survey, and as you may have noticed there's fairly substantial stability in terms of the overperception of risk across the two surveys so there's no reason to assume that this all of a sudden happened in 1985. I mean, and then we hit a plateau.
Q. When did the uptick, if you will, of overassessment of the risk occur?

A. There was substantial publicity given to smoking in the 1950s, but certainly I think the advent of on-product warnings and the release of the HEW report in 1964 was an important event in terms of government action. Since that time you've noticed a dramatic shift in terms of the types of people -- types of cigarettes people smoke.

Q. Lower tar?

A. Lower tar.

Q. You've indicated for me two key times that there was substantial publicity in the '50s, and then in 1964 I take it you're referring to the surgeon general's report and the on-product or on-package warnings?

A. No. I think it's the HEW report before the surgeon general started doing this, so the report on lung cancer in 1964.

Q. Have you looked at the period of the 1950s to see what the publicity was that you characterize as substantial?

A. I've lived in the 1950s.

Q. So did I, unfortunately.

A. So that I was there for some of it. We actually went back and reviewed old magazines as well. In the book you may see some of the old ads that were

reprinted, so that was part of this as well. In fact, Duke has an inventory of advertising donated by an advertising firm we went through. We went through the Reader's Digest article counts that I compiled historically and went through the Gallup poll surveys beginning in 1954. And I cite the "health mentions in advertising" from 1926 through 1986 that have been compiled by Ringold and Calfee, so there's some evidence out there.

Q. Do you mention any --

Had you finished your answer?

A. Yes, that's fine.

Q. Okay. Do you mention anywhere in your book any public statements made by any tobacco company on the subject of smoking and health?

A. Well "advertising with health mentions" are official tobacco company statements. So we have various mentions of health claims regarding effects of smoking, the throat, coughs, the lungs, tar figures, surgeon general's warnings, et cetera. We have information on that by year.

Q. Have you included anywhere in the book or in your thinking statements made by either the tobacco companies themselves or their trade organizations to the effect that the relationship between smoking and

disease has not been established, that there's a controversy, that considerable doubt remains about the connection?

A. No, I don't think these are critical events that rank along the surgeon general's reports. I don't -- My sense is that the public would not treat a comment like that with the same weight that we would treat an on-product warning.

Q. An on-product warning from the government, not from the company?

A. An on-product warning from Congress.

Q. Going back to your Cigarette Warnings article, you say that "...the obligation of the manufacturer is to convey information with respect to risks that consumers are unlikely to be aware of based on personal experience or general public knowledge."

Was it known in the 1960s that nicotine is addictive?

A. It's been known since -- ever -- since long before then that quitting smoking was difficult. In fact the medical community called it "habituation" then instead of "addictive," so I don't think that the concept is new. The label may have changed but the concept is not new.

Q. Is the answer to my question that it is not

known in the '60s that nicotine is addictive in terms of general public knowledge?

A. That calls for whether -- a question of whether the general public understands medical terminology. From my standpoint, that doesn't matter. I only care about whether the public understands the operational concept of what you mean by "addiction," which is that quitting smoking is hard to do, and the public does understand that. This is not a state secret. That's why we have Smoke Enders and all these other outfits.

Q. Well if something is just hard to do, the inability to accomplish it may be due to the weakness of the individual; right?

A. It may be that the individual really doesn't want to do that.

Q. Or he doesn't really want to. But it may be due to the weakness of the individual; right?

A. If the individual wants to do something but can't do something, I -- I think the -- it's not clear what's going on there so I'd rather pursue it with respect to a specific case. I -- What you interpret as weakness, I interpret it as there's an element of the individual's problem you have not factored in. You attribute it to weakness, I

attribute it to some other aspect such as the fact that the individual may really like cigarettes, then, that you're not counting.

Q. Well the attribute I'd like you to consider is whether or not an addictive quality, based on a physiological dependence, makes a difference in people's understanding about whether it's just tough to quit or whether there's a physiological tie to the product that they're trying to get released from. Do you allow for that possibility in your thinking?

A. I can allow a -- there to be physiologic costs associated with quitting.

Q. What does that mean?

A. Let's say I was giving up Coke, that I might get jittery or I might get headaches, there might be physical effects on me because I'm quitting. These would be part of the costs associated with the transition of giving up caffeine.

Q. In the 1960s was it generally understood that nicotine is addictive in a physiological sense; that is, that it causes a physiological dependence on the substance?

MR. ATKESON: Asked and answered.

A. This is exactly the question I think that we've already asked and answered where I talked about

habituation, and that's essentially what it was labeled then.

Q. By whom? By the public?

A. Surgeon general labeled it habituation. I don't think the public talks about words like habituation. I never used it until I read the surgeon general's report.

Q. And if the cigarette companies acknowledged internally that nicotine was addictive, that would be information that consumers would unlikely be aware of as that label is concerned, addiction; right?

A. I think what matters is whether people operationally understand the consequences. Whether you call it habituation, whether you call it addiction may be a matter of interest to the medical community but I don't think that your labels are a matter of interest to the typical citizen. What they care about is: Is smoking hard to quit or not? You can call it whatever you want.

Q. If the public understood it to be either habituation or something that was tough to quit but the cigarette companies knew that it was addictive in the 1960s, by your measure they would have an obligation to disclose that, wouldn't they?

A. No. What I've been saying is that I don't think

the public can distinguish between the words "habituation" and "addiction."

Q. I'm not asking whether the public can distinguish.

A. If they can't distinguish it, there's no obligation to tell them something they can't distinguish.

Q. So there's no obligation to disclose what you know.

A. If the public is -- If you're not disclosing information that will be of value to the recipient, there's no obligation to disclose it.

Q. Who decides whether it's of value, sir?

A. Well for the purposes of this discussion, I'm declaring that medical terminology where it's not generally understood what the difference would be between addiction and habituation, getting into a detailed discussion of the nuances of that with the public would not be valuable. That's my assessment as a hazard warnings expert.

Q. Would you consider the addictive nature of cigarettes, assuming that were the case for the purpose of my question, to be the sort of idiosyncratic information that would be useful to a consumer?

A. I don't think it's idiosyncratic. I don't think it's a state secret or a private knowledge type of concern that quitting smoking is hard to do. That's not something that Philip Morris or R.J. Reynolds or Lorillard or Liggett knows but nobody else can discover or would know. This is common knowledge. This is not idiosyncratic.

Q. And you see no difference between an addiction and something that's hard to quit.

A. From an economic standpoint, that's what we mean by "addiction," it imposes costs on quitting. Doctors may think of it differently, but from an economic social-sciences standpoint there is no difference.

Q. Well from a social-science standpoint there may well be an explanation for an addiction beyond that it's hard to quit; right?

A. Is that a -- Is that -- What's the explanation? Are you giving me -- Are you telling me --

Q. That there's a physiological basis for reliance on a substance.

A. There could be physical effects, there could be mental effects, there could be both.

Q. And that is something that exists in an addiction that is beyond just making something

difficult to quit; isn't that true?

A. Are you asking me to make medical judgments as to what the term "addiction" means?

Q. No. Do you have some psychology background? You make judgments all the time about risks and warnings and hazards. It's in that context that I ask you the question.

A. I just call it hard to quit. I don't label anything addiction.

Q. Anything --

A. I let doctors -- I never use the word "addiction" to label behavior. I talk about attributions, costs of quitting or changing behavior, but addiction is not a term that would be an economics term. That's a medical term.

Q. So you don't use addiction to refer to people that use heroin or Coca-Cola, for two extremes.

A. I've used it for, you know, Coca-Cola, you know, saying I'm addicted to Coke, referring to Coca-Cola but --

Q. Thank you for that clarification.

A. I'm not sure it means anything other than, you know, casual talk.

Q. The surgeon general warnings that started in 1964 don't quantify the risk, do they?

A. No, they don't.
Q. And it's a company's responsibility to tell the public more about its product than simply that there may be a risk; isn't that right?
A. Well the surgeon general's annual reports are filled chock full with numbers, so it's not like the surgeon general does not put out in the public domain numbers. Generally, with the modern exception of some adverse-reaction probabilities for prescription drugs that are on warning labels for these products, hazard-warning information is not quantitative, it's qualitative.

So the fact that you're providing qualitative information does not necessarily mean people won't form quantitative judgments based on it. You're essentially picking the language that will lead to the appropriate risk judgment based on the verbiage you provide.
Q. But you believe, do you not, that a company's responsibility goes beyond providing information that will lead consumers to have an assessed probability that is nonzero.
A. That companies are obligated to do what? I don't understand the question.
Q. Let me read to you --

Let me read to you from this same article about cigarette warnings at page 245. "Indicating that lung cancer or heart disease is a potential consequence of smoking does not convey the significance of the risk." You agree with that statement?

A. I agree.

Q. You wrote it.

A. Yes.

Q. And it goes on, "The company's responsibility" -- referring to the cigarette companies -- "goes beyond providing information that will lead consumers to have an assessed probability q that is nonzero"; right?

A. Then what do I say?

Q. "This distinction is important because the warnings themselves provide no explicit probabilistic information concerning the level of the risk. This is true not only of cigarettes but virtually all other mass-marketed products as well."

A. Essentially, ideally you want the risk perceptions to be right on target, they're not. Risk perceptions are now too high. In my efficiency world companies have an obligation to get people closer to the true belief, which would mean decreasing the

public's perception regarding risks. I don't think that's something that the state attorneys general would welcome, nor would the federal government. So they're, in effect, constrained from doing what I would recommend.

Q. Who's constrained?

A. The companies.

Q. How's that?

A. I think company press releases that in effect say the surgeon general information that you have processed has lead you to have an exaggerated perception of the risk, most of you think the risk of lung cancer from smoking is ten times bigger than it really is, most of you think that the risk of death from smoking is perhaps twice as great as it really is. I don't think that kind of public-education campaign would be acceptable.

Q. And that view is based on the current state of what is known about cigarettes and the hazards of cigarettes in what the government has put out; right?

A. My view is based on my assessment of the current anticigarette climate, so that's the driving factor.

Q. Right. Cigarettes were being sold in 1950, weren't they?

A. Yes.

Q. And in 1950 did a company have a responsibility to provide information that will lead consumers to have an assessed probability about the risk that is nonzero? They had that responsibility in 1950, didn't they?

A. They are -- Consumers had an assessed probability that was nonzero. People have been worried about the risk of smoking since -- I know at least as far back as the 19th Century.

Q. Sir, do you repudiate your own statement in your article?

A. No, I'm saying that even -- this is a general statement regarding companies. What I'm saying is that even without doing anything explicit in the 1950s, people were already beyond nonzero risk perception. They were already there. They were there a hundred years ago with respect to smoking.

Q. But it wasn't quantified, was it?

A. You don't have to quantify it for them. People will draw upon the information and perform their own quantitative judgments.

Q. A company's responsibility goes beyond providing information that will lead consumers to have an assessed probability that is nonzero. What that means is a company has a responsibility to give

numbers information, quantity information so consumers can be informed. Isn't that exactly what that means?

A. Is this like interpreting the Bible or something? That's not what that says. All I just said, companies have a responsibility to have -- provide information so that risk perceptions are nonzero. That's essentially all it says. It doesn't say quantitative risk information.

Q. Does a company have a responsibility to give information to consumers that will convey the significance of the risk?

A. Depends on what consumers already know from other sources.

Q. What if they knew nothing in 1950, did a company have the responsibility to provide information to consumers that conveyed the significance of the risk in 1950?

A. Well we know that people already did have information in the 1950s. You can get this out of the Gallup opinion polls back then.

Q. I used the year 1950, not the 1950s.

A. Well the Gallup poll data started in 1954.

Q. Right.

A. I doubt if it changed that much from 1950 to

1954 if you look at the trend.

Q. Are you guessing now?

A. No. I said "if you look at the trend."

So unless you see some critical event that would account for a big stark jump in 1953 to 1954 then there's no reason to assume that it's going to be far off.

Q. Does a company have a responsibility from 1950 to the present to provide consumers with explicit probabilistic information concerning the level of risk posed by their products?

A. No.

Q. The warnings on cigarettes from 1964 to the present, even though they've changed, provide only partial information; isn't that true?

A. They provide indexes of riskiness from which people can make overall risk judgments.

Q. Do they provide partial risk information?

A. There's less there than in the surgeon general's reports, yes. That's what warnings do.

Q. So in and of themselves they provide only partial information?

A. All warnings provide partial information.

Q. How would a consumer or a body of consumers derive the rest of the risk information, if not from

warnings?

A. First of all, you don't need to derive all of the risk information. You can use the information that's available to form a risk judgment about the overall risk even though it's only partial information.

(Interruption by the reporter.)

A. So, for example, I don't think there's any risk out there about which I have full information, yet I make risk judgments all the time.

Q. At page 249 you talk about excise taxes and you say, "In the cigarette context, taxes that are proportional to the number of cigarettes smoked can be viewed as a mechanism for providing incentives to decrease smoking that will discourage smoking just as would higher risk perceptions." What's the basis of that statement?

A. The analysis in my book Smoking: Making the Risky Decision, plus basic economics.

Q. What aspect of basic economics?

A. If you increase the price, people buy less of it. Similarly, if you make a product less attractive, such as by increasing the risk, people buy less of it. You can establish a price equivalent for risk perceptions or, in my case, a tax equivalent

for lung cancer risk perceptions, which I've done.
Q. You go on to say, "A cigarette excise tax can reduce smoking levels to a socially optimal amount." And then there's a footnote that says, "Ideally, one would, however, like to vary the tax depending on the location of the smoking activity, the number of the exposed individuals, and the smoker's concern with their own welfare." What's a socially optimal amount of smoking?
A. If you had a situation where you hypothesize that people underestimated the risk, without providing risk information, you could achieve the same level of smoking that would occur if people fully understood the risk with an excise tax without increasing risk perceptions. So what that says is that even if people know nothing about the risks associated with smoking, if excise taxes are sufficiently high their decisions will still be the same as they would have been had they made decisions based on full information in a world without excise taxes. So in some sense it says that excise taxes can substitute for knowing about the risk.
Q. Putting aside cigarettes for a moment, what is the -- the history or the origin of excise taxes? Do you know?

MR. ATKESON: Just a second.
Q. In terms of their purpose.
MR. ATKESON: Do you mean just generally or --
MR. SILBERFELD: Yeah, generally, unrelated to cigarettes.
A. It's a way to raise money, so the purpose is to raise money for the governments, state and federal government. It's always desirable politically to impose excise taxes on a minority of the population because that way you can retain more political support. So taxes on luxury yachts would be more popular than taxes on cars that everybody buys. Taxes on luxury cars, which we noted were an event of the past decade, will be more popular than taxes across the board on cars.
Q. Are excise taxes in general, unrelated to cigarettes, tied to a particular purpose in terms of their imposition? That is to say, let's take luxury cars, are the dollars generated from excise taxes on luxury cars tied to a particular societal or governmental purpose, or are they general funds?
A. Sometimes they're general funds, sometimes they're earmarked. Let's say a highway trust fund could -- gasoline taxes could go into a highway trust

fund. There's often talk of earmarking taxes, like we're going to increase taxes and we'll use this to do X, Y and Z, even though it goes into the state treasury, because we have this tax hike it's going to be used for this. Typically they go into the general revenues, even though they may be earmarked indirectly.

Q. Are you aware of any instance in which excise taxes for products such as cigarettes or alcohol have in fact been earmarked for a particular societal purpose or governmental goal?

A. I can't think of any at this point, but I have not studied it either. I haven't looked at it.

Q. With respect to whatever the State of Minnesota does with the excise taxes it collects, do you know what it does with them?

A. No.

Q. Do you have a hypothesis or an assumption that it goes into the general fund?

A. I suspect it does go there, but at the time they increased the excise tax did the state legislature at the same time say now that we've increased the excise tax, that means we can now do X, Y and Z? I don't know what the horse trading that went on was.

Q. If excise taxes on cigarettes, across decades

now, not talking about any particular time frame, are general funds used by the state for whatever its good and valuable purposes are, why should they be counted at all in your methodology about costs?

A. Where they go is not important, where they come from is.

Q. They come from smokers.

A. That's right.

Q. They don't come from cigarette companies; right?

A. Any tax on products is shared by consumers and producers, and to the extent that you impose a tax that decreases the consumption of a product, that's going to affect producers as well.

Q. Over 30 years has the fact of excise taxation depressed the consumption of cigarettes?

A. Of course.

Q. How much?

MR. ATKESON: I'm sorry, what'd you say?

MR. SILBERFELD: How much?

MR. ATKESON: I'm sorry.

A. I have to work it out depending on the percentage share of the price of cigarettes comprised by excise taxes, but I -- that's something I could calculate, but I can't do it now.

Q. And that drop in the sales of cigarettes is

solely and exclusively attributable to an increase in excise taxation?

A. Yes, demand curves for cigarettes slope down. It's not controversial. Even plaintiffs' experts say this.

Q. Not related to changes in attitudes about smoking?

A. Just related to price. Increase the price, people buy less. Even estimates by noted plaintiff experts claim that this is the case.

Q. In the first instance, though, when a consumer goes into a retail outlet to buy a pack of cigarettes and 50 cents of the price is an excise tax, that 50 cents is paid by the consumer; right?

A. If you want to label it that.

Q. Well whose money is it?

A. Well the consumer buys the product --

Q. With his money.

A. -- but it's a joint transaction. Transactions have two parties, and had it not been for the excise tax the total revenue to the firm would have been different. So if the firm could have sold the pack of cigarettes for the price including the excise tax, the firm would have, let's say, gotten two fifty instead of two dollars for the pack of cigarettes,

then in effect the firm is paying. Markets have two sides that act simultaneously. Supply and demand happen jointly. Both parties are involved.

Q. The direct contribution that's made to excise tax is made by the consumer. There may be an indirect effect on the company, but the cash is the consumer's.

A. No, the labeling's irrelevant. This is how they sell people on payroll taxes. They tell you that your employer's paying for half of it and you're paying for the other half of it with your deduction. From an economic standpoint it doesn't matter how you label a tax that way, whether it's the employer or the worker has no consequence whatsoever in terms of whether you pay the full payroll tax or the employer pays the full payroll tax, and it's the same thing here. Calling it a consumer tax because the consumer's walking into the store is an irrelevant label.

Q. It's a shared responsibility; right?

A. Both parties share in the tax costs.

Q. In what proportion?

A. I don't know.

Q. How would we find out?

A. Well you'd want estimates of both the supply and

the demand elasticities for cigarettes.

Q. You're sure, though, that without regard to the percentage that is shared of the excise tax, that both the company and the consumer suffer an impact from the excise taxation.

A. Certainly.

Q. Well satisfied about that.

A. Yes.

Q. Therefore, to the extent that you count a hundred percent of the excise taxes as being part of your equation you're overstating the effect of excise taxes insofar as you count the consumer component of it; right?

A. I don't understand this at all. I don't understand why this is a problem.

Q. Why should we count at all the consumer component of excise taxes in your methodology?

A. Because if the excise taxes are sufficiently high, and I'm a consumer, and let's say I don't buy cigarettes because of that, I've suffered a social loss. That matters to me. Or if I've paid for the cigarettes and because of the excise tax the price is higher, then I'm also discouraged.

Q. Well if the argument goes that tobacco companies have already contributed to the healthcare costs of

smokers by excise taxation, we've just established that they share that excise tax hit between themselves and the consumer; right?

MR. ATKESON: Objection, misstates the argument about excise taxes and why they should be included.

Q. You can disagree with me.

A. I do disagree with the way you've characterized that.

Q. Tell me why.

A. Essentially, if smoking activity generates a cost of, let's say, 25 cents a pack, then the socially efficient amount of it, you need a 25-cent-a-pack imposition on cigarettes, it doesn't matter what the division is between consumers and producers.

Q. Why doesn't it matter?

A. Because that will -- this is the net social cost associated with the product. The product will be, in effect -- if the product is costing 25 cents damage per unit and you're paying 25 cents damage per unit, whether it's paid by the consumer or the producer doesn't matter so long as you're collecting your 25 cents per unit, because you're reflecting the full social cost in the price of cigarettes.

Q. Let's assume that the State of Minnesota's case is worth 25 cents, and 25 cents had been collected in excise taxes total. Part of that 25 cents of excise tax was paid by the companies; right?

A. Through decreased profits, not --

Q. Yes. Not directly, but through decreased profits, as you've noted.

A. Right.

Q. And part of it was paid by the consumer; right?

A. Because the consumer has to pay a higher price for the cigarettes.

Q. Right. The State of Minnesota is asking that the cigarette companies pay them 25 cents for their damages in this hypothetical.

A. But the smoking costs are already socially efficient. For social efficiency, the optimal tax, the efficient excise tax, and this is well established Pigouvian, P-I-G-O-U-V-I-A-N, tax, is simply to tax you based on the external cost. This is in every public finance textbook. I'm right, this is not -- this is not controversial.

Q. The Pigouvian tax only operates if it's directly earmarked for the activity that we're trying to pay for.

A. It's earmarked. This is a smoking-related tax.

This applies to cigarettes.

Q. This doesn't apply to health costs, does it?

A. No, the -- I don't care what you do with the tax. The Pigouvian argument has nothing whatsoever to do with whether you, let's say, take the tax from polluters and use it for pollution prevention. You could burn the money for all I care. What matters is that you collect the money from polluters, and that's the same thing here. If you collect the money for 25 cents a pack, you're done. You do not have to earmark it.

Q. And what I'm asking you is, you're not collecting the 25 cents from the cigarette companies, you're collecting it from the cigarette companies and the consumer, to adopt your reasoning.

A. I'm saying you're collecting 25 cents a pack. That's what you have to understand. That's all that you need to understand.

Q. And I'm not talking now about economic efficiency, I'm talking about math. If --

A. I'm talking math.

Q. Let me finish.

If the State of Minnesota is entitled to 25 cents from the cigarette companies, and the cigarette companies operate that they have a 25-cent credit by

reason of the excise tax, in fact the cigarette companies are getting a windfall by whatever proportion of the excise tax is paid by the consumer. Isn't that true?

MR. ATKESON: Objection, misstates the legal arguments in this case.

Q. Go ahead.

A. I agree with our objection, totally misconstrues what our argument is with respect to excise taxes.

Q. Yeah, but what's the answer to my question?

A. There is no subsidy because -- Or the tax on cigarettes equals the social cost. You're being reimbursed for the social cost of -- for each pack of cigarettes.

Q. By a combination of the companies and the consumer; right?

A. By the total cost imposed on smokers.

Q. Paid by the companies and by the consumer; right?

A. Part of -- It's simultaneously paid by both. They are both parties to the same transaction.

Q. In a proportion that you don't know.

A. The tax -- The division of the tax burden I don't know.

THE WITNESS: One hour yet?

MR. SILBERFELD: Yeah, it's about an hour. You want to take a break?

(Recess taken from 2:04 to 2:18 p.m.)

BY MR. SILBERFELD:

Q. Referring back to the Cigarette Warnings article from 1994, at page 253 you write, "It is well-known that individuals tend to overestimate the risks associated with low probability events. How this phenomenon affects the risk perceptions with respect to smoking is unclear since the lifetime smoking risks are quite substantial, whereas the smoking risks per cigarette are low." With respect to the statement "lifetime smoking risks are quite substantial," how substantial are they?

A. Estimated lifetime mortality risk, I'd say roughly between one-sixth and one-third. I can give you the exact number that I've estimated, .18 to .36 total mortality risk to the smoker.

Q. What does that mean in terms of smokers versus nonsmokers?

A. Out of 100 smokers, 18 to 36 of them will die sooner because they smoke.

Q. Sooner than a nonsmoker would?

A. Sooner than an equivalent nonsmoker.

Q. And that's for lung cancer?

A. That's everything.
Q. That's all risks?
A. All risks.
Q. What is it for lung cancer?
A. Lung cancer mortality risk is .06 to .13 so it's 6 out of 100 to 13 out of 100.
Q. Heart disease?
A. Don't have that. It would be subsumed in total mortality. I only developed the numbers that would correspond to the questions.
Q. In the audits and survey data.
A. And in my survey.
Q. Okay. And you asked about overall mortality and lung cancer only?
A. I did lung cancer, lung cancer mortality in various surveys, and overall mortality.
Q. And the -- the figures of 18 to 36 out of 100 being the overall mortality of smokers compared to nonsmokers, that's based on the survey data or based on the surgeon general or what?
A. Well the 16-to-32 estimate for 1985 was the surgeon general, the 18-to-36 estimate is based on more recent evidence not yet reported by the surgeon general that increased the estimate of the smoking facility toll.

Q. From what to what?
A. From 390,000 deaths per year to 434,000.
Q. Roughly a seven or eight percent increase?
A. Roughly.
Q. And would that cause the per hundred deaths to also move upward --
A. Yes.
Q. -- by the same seven or eight percent?
A. Yes, ignoring differences in the size of the smoking population.
Q. Sure. At page 257 of the cigarette warning article, you write, "Companies have two primary mechanisms for communicating the risk, hazard warnings and other risk communication efforts." Do you recall writing that?
A. I'm not sure what substantive content is in that sentence since --
Q. It's in the category or the section called "Judging the Adequacy of Risk Communication." I'd be happy to show it to you. Would you like to see it? I've kind of highlighted it in blue at the bottom there.
A. (Witness reviewing document.)
Q. My question is: What other risk-communication efforts were you thinking of when you wrote that?

A. Well I was thinking of alcoholic beverages where they've undertaken advertising campaigns with respect to drunken driving.

Q. Anything else?

A. You could do it in terms of advertising, tar listings for cigarettes, nicotine listings would be a way.

Q. How would a nicotine listing be a risk-communication device or effort?

A. If you're letting people know the nicotine content of the cigarettes, to the extent that they're concerned with nicotine, either because of its effect on the difficulty of quitting smoking or on a belief that the nicotine itself is risky, then letting people know the nicotine content would provide information.

Q. Is it known whether nicotine, having nothing to do with habituation, dependence or addiction, is harmful?

A. I think there have been suggestions that it might be. I'm not sure how well established that research is. I haven't delved into it.

Q. Have you ever looked at the effectiveness of the alcohol or beer industry's efforts with regard to education about drinking and driving?

A. No. I've discussed information concerning total messages received, so they keep tabs on how many people have seen the ads, but I haven't done any studies to show that they've done any good.

Q. Do you know whether such studies have been done at all?

A. I don't.

Q. At page 260 of your Cigarette Warnings article you write, "The fact that the government has mandated warnings in no way impedes the company's ability to design a safer product. Nor does it reduce a company's responsibility to learn about the product risks." You agree with that statement today?

A. The fact that warnings are out there, warnings alone don't really relieve you of the other obligations, they would be distinct.

Q. And a company, notwithstanding the existence of warnings, has a responsibility to learn about its own products risks.

A. If there is idiosyncratic information that can't be discovered through government studies. So in the case of cigarettes, we already have piles of surgeon general's reports that I don't think the company can augment that much, whereas in the case of products such as TMJ implants made out of Teflon, I think the

company would be in a situation of private knowledge about the risks, and the same would be true of the Premier cigarette where it's more specialized and they developed it.

Q. Should the duty to look at product risks be a continuing one?

A. That sounds like a legal issue as opposed to economics.

Q. Your article says, "To the extent that companies would have an obligation to undertake product risk research and respond to, for example, reports of adverse reactions, this responsibility should be a continuing one." You agree with that?

A. From an economic standpoint, if there is opportunities for requiring information about new risks then you wouldn't want to, for example, exclude consideration of new adverse reactions that you might learn about just because you did it before.

Q. From an economic standpoint, why would that be a good thing, to have a company have a continuing responsibility to research its own product?

A. Well depends on which the -- which organization is the most efficient generator of the risk information. So in the case of a mass-marketed product the most efficient may be the government; but

if you have a company making a specialized product for which it has special scientific knowledge, the company itself would have that ability. Like in the case of prescription drugs, the company developed the prescription drug and the company itself will receive the adverse reaction reports so that the company is well positioned to transmit that information to the government agency.

Q. In the pharmaceutical context about which you have considerable experience and knowledge, the pharmaceutical firms have research and development departments; right?

A. Yes, they do.

Q. And the government has a research and development, or at least a research arm in the body of the FDA; right?

A. For drugs.

Q. Drugs.

A. They have some research capability, but almost all of its -- the companies send in the stuff and the FDA reads it. I think all the real research happens in the companies. That's my sense.

Q. Right. What about with respect to cigarettes? What arm of government has a greater ability to research the health effects of cigarettes than the

cigarette companies themselves?

A. Well cigarettes are a product not sold by a single company. In the case of a prescription drug, you're temporarily granted a monopoly over the product. So if you're interested in the risks associated with tobacco, it's a topic for which there is a common interest across all cigarette companies and it's divided across all cigarette companies so it's more efficient to have it done by some central entity. In addition, we have decades of experience with smoking, so rather than feeding mice doses of a particular chemical or exposing them to cigarettes, we actually have information about how people have responded, and that's even better than mice because we want to know the risk to people, not the risk to mice, and that's what the surgeon general's reports are focused on, what's been the risk to people, and we have substantial evidence on that.

Q. Do you regard whatever the government has done for 30 years to be a full and complete study of all of the health effects of smoking that are known or knowable?

A. I don't think you'll ever get to a situation of full information, but the question is: Do we know enough to have a high enough risk perception to

reflect the overall risks associated with smoking? And right now there seems to be no evidence that we're missing people. So when they do the estimates of the death statistics, abstracting from it issues such as variables that did not go into their analysis that should have, there's no reason to believe that we're undercounting the deaths.

Q. In 1964 when the first surgeon general report came out, do you believe as of that time that the government, in the person of the surgeon general, had a full and complete understanding of the health effects of cigarettes more than what the companies knew or should have known about their own products?

A. I don't know. I don't know what the companies knew.

Q. Have you asked about that?

A. No.

Q. Does it matter what they knew?

A. No, not to me.

Q. Does it matter to the public?

A. I don't know what they're curious about.

Q. Did it matter to the public in terms of risk assessment in 1964, do you think, what the companies knew?

A. What I care about is whether the public's risk

perceptions are adequate, and for the time period I've looked at I've judged that with respect to the available scientific reference point, and for my time periods I know of nothing the companies could have known that would have altered this. So there's no experiments with mice that they may have done that would have, for example, altered my reference points I used for judging whether these perceptions were accurate.

Q. Your work suggests that people overstate the risks of smoking in the '80s and '90s time frame; --

A. Yes.

Q. -- right?

Are you aware of any studies that reach a contrary conclusion?

A. I believe lots of studies have claimed the opposite result. I mean not -- not -- I don't know how many, but more than one.

Q. Are you familiar with the Harris poll in 1983?

A. No. Unless it's cited in the book, I don't -- I think I do Gallup polls.

Q. Well it's actually not cited in your book but it is cited in the surgeon general's report in '89.

A. What's the wording of the Harris poll question?

Q. The wording is: In helping people in general to

live a long and healthy life, how would you rate the importance of? And then they were given certain activities and they were to rate the importance of the activity between 1, which is low importance, and 10 which is utmost importance. And smoking or not smoking, as the case may be, was rated behind keeping air quality acceptable, water quality acceptable, taking steps to control stress, getting enough vitamins and minerals and exercising regularly and having your smoke detectors working in your house.

Would you regard that as an overstatement or an understatement of the risks of smoking?

A. I think those results tell us two things. First, they tell is when you have these qualitative one, two, three, four, five questions, that's not as good as an objective risk assessment, period. The second thing is that when people are answering, if I'm a nonsmoker I'm not going to rate smoking or decreasing smoking as important, so if you have 70 percent of the respondents for whom smoking is not even a pertinent activity, then they're not going to put that high on the list. In the case of the people who do smoke, if they smoke and they enjoy the fact that they're smoking, they're cognizant of the risks, then they're not going to put that high on the list

either because they're going to look at things that will reduce their risk without any cost to them. Sort of reducing air pollution is something for which they don't have to give anything up. So I think the results may be an artifact of the character of the question.

Q. So both nonsmokers and smokers may have a bias built in in the answers that they give to questions such as this?

A. I just don't think it's a very good question if what you're trying to get as is people's risk perceptions.

Q. Would it be useful to compare what people, lay people said about the subject of comparative risks with what experts said about the same subject in the same time frame? Is that a useful tool to determine whether people over or understate the risks of smoking?

A. Well we don't know, as I've indicated, that that's what they're answering when they answer the question. Are they answering about comparative risks to themselves given their current activities? And if I were a smoker, but I'm not, would reducing smoking be important? Is that the question they're answering? I don't think so. So I don't know -- You

know, I don't know exactly what's going through people's heads. It's simply not a question you can run with.

Q. If the surgeon general in 1989 concluded that, based on this Harris poll that I've just described to you, people woefully underestimated the risks of smoking, would you disagree?

A. Yes. Certainly.

Q. Have you seen, in the '89 surgeon general report, the discussion of absolute relative and attributable risk?

A. I have read the 1989 surgeon general's report, not recently, but I have read it, the entire report.

Q. Let me show you page 206 of that report, and at the top of that page there is a short paragraph about absolute risk. Do you see it?

A. I see underlined something about smoking on longevity, which I nailed.

Q. When you say you "nailed" it, what do you mean?

A. I did that question, but wording the question in a way people could understand, and I found that people did not underestimate the effect of smoking on longevity.

Q. Putting my underlining aside, is the paragraph about absolute risks?

MR. ATKESON: What is the question?

MR. SILBERFELD: Is the page before him about absolute risks?

Q. And I'll represent to you that's from the '89 surgeon general.

MR. ATKESON: I'm sorry, you just want him to read whatever paragraph that is?

A. They quote two different studies. So these aren't surgeon general's estimates, these are references to studies in the literature where as much as one-third of heavy smokers, not average smokers, age 35 years, will die before age 85 of diseases caused by their smoking, and 50-year-old smokers will shorten their lives an average of six to eight years if they smoke a pack a day from a 1979 estimate.

Q. Both those statistics are expressions of absolute risk, are they not?

A. These are not the surgeon general's estimates, they're not the estimates for the entire population. These are quoting other studies. So the surgeon general, when the surgeon general did the estimates of the death, did not provide estimates based on their statistics, but yes, these are absolute risks.

Q. And they're absolute risk figures; right?

A. Yes, but they're not the surgeon general's

figures, they're other people's.
Q. Are you familiar with the relative risks that are reported by the surgeon general?
A. Such as saying the relative risk of lung cancer for smokers is X times as great as nonsmokers?
Q. Right.
A. I have seen some of those statistics.
MR. SILBERFELD: Let me mark as next in order a two-page document which I'll represent to you is from the '89 surgeon general report. It's page 150 and 151 and it's -- one table is for men, the other one is for women.
(Plaintiffs' Exhibit 3810 marked for identification.)
BY MR. SILBERFELD:
Q. Exhibit 3810 which is before you, Mr. Viscusi, is a table, the first page of which is about males, the second page of which is about females, and it gives the relative risks for current and former smokers of cigarettes. And if we just go down to lung cancer for males, current smokers, on the first page of that, you see a relative risk of 22. You see that, sir?
A. Yes.
Q. And what does that mean in real terms, to have a

relative risk of lung cancer for current smokers of 22?

A. Well without reading the whole text, my assumption is that means that the probability of lung cancer for smokers is 22 times as great as that for nonsmokers.

Q. And for former smokers it goes down to about 9. Do you see that?

A. That's correct.

Q. Are you familiar with the term "attributable risk"?

A. I've heard it.

Q. Are you familiar with how to convert a relative risk to an attributable risk?

A. No.

Q. You've never done that calculation?

A. I don't know. Tell me what it is.

Q. Sure. Have you seen a calculation that looks something like this, relative risk minus 1, over relative risk is the attributable risk? (Handing.)

A. You know, basically you can back out to -- you try to back out the risk number from this.

Q. I'm trying to get from relative risk to attributable risk.

(Discussion off the record.)

A. We're not sure if this number, or I'm not sure this formula makes sense.

MR. ATKESON: Counsel, shouldn't this be "one minus relative risk" as opposed to "relative risk minus one"?

THE WITNESS: Because relative --

MR. SILBERFELD: It comes out the same.

THE WITNESS: It can't.

MR. ATKESON: Twenty-two minus 1 over -- 21 over 22 is not the same as 1 minus .22 over .22. I just --

Q. Are you familiar with the calculation at all, or does it have no meaning for you? If it doesn't have any meaning --

A. It doesn't have any meaning to me.

Q. You've never done that?

A. No.

Q. What is "attributable risk"?

A. I don't know. Presumably it's the risk attributable just to lung cancer.

Q. Well does it refer to that proportion of a disease that can be attributed or caused by a particular risk factor such as smoking? Is that the scientific definition of "attributable risk"?

A. If that's what you're telling me, that sounds

plausible.
Q. In the surgeon general's report there's a section on attributable risk on the same page that I gave you earlier, page 206. Does that refresh your memory in any way as to the notion of attributable risk?
A. This is what we discussed this morning about the percentage of lung cancer deaths attributable to smoking.
Q. And it's 80 to 90 percent?
A. That's correct.
Q. The study that I mentioned to you, the 1983 Lewis Harris poll, would you describe that as a comparative-risk study?
A. I don't know what it was because I don't know how people interpreted that question, whether they were even thinking of themselves or other people. We've already went into the problems I found with it so I'm not sure you can characterize it as being meaningful in any way.
Q. Would you say it was not meaningful in any way?
A. I think it's a bad study, it's a bad question.
Q. So do you accept conceptually the notion that one can measure comparative risks?
A. Yes, you can measure them. I wouldn't run a

survey about them, but you can measure them.
Q. And do those measurements have meaning for you qualitatively?
A. Yes, you would have a quantitative measure, but I would -- still would not use that in a survey.
Q. Because?
A. To say that, for example, smoking accounts for 85 percent of lung cancers doesn't tell you -- and then let's say people believe that. That doesn't tell you anything whatsoever about whether people overestimate or underestimate the risk of lung cancer associated with smoking because you're only talking about the share, you're not talking about the probability of lung cancer overall. So if they think nobody gets lung cancer but 95 percent of it's smoking, that doesn't prove that they perceive the smoking risks, and vice versa.
Q. Sure. Just before we leave the relative risks, if you could turn the page. The lung cancer relative risk for women age 35 or more is 12 for current smokers.
A. That's correct.
Q. Which would mean current smokers are 12 times as likely to die of lung cancer, females, --
A. Right.

Q. -- than nonsmokers.
A. That's correct.
Q. In an article you wrote in 1995 about "Secondhand Smoke: Facts and Fantasy," this was in the journal Regulation, I think.
A. That's correct.
Q. You said, at page 44, "Even if the flawed scientific evidence" -- referring to environmental tobacco smoke -- "is taken at face value, the case for banning smoking in the workplace on a risk-based grounds is not compelling." Do you still hold that view?
A. Yes.
Q. So smoking should be permitted in the workplace?
A. Yes.
Q. And there ought be no segregation of smokers from nonsmokers?
A. I didn't say that.
Q. That's the question.
A. I didn't say that. I was talking about --
Q. I'm not attributing that statement to you, I'm asking you the question.
A. What I'm saying is, whether there needs to be government regulation prohibiting smoking in the workplace or whether we can let the market work, can

we let firms establish smoking policies that make sense for their own firms.

Q. So smoking should not be banned in the workplace by government.

A. That's correct.

Q. Whether smoking is permitted in the workplace should be a matter for every private business or entity or person to decide for themselves?

A. That's correct. Like my barbershop, for example, can decide whether they're going to ban smoking in the barbershop.

Q. And everybody should be allowed to do that in sort of patchwork fashion for themselves.

A. Yes.

Q. At page 45 of the same article you say, referring to the insurance costs of smoking, "Perhaps the most misunderstood element of the smoking debate is the health insurance cost of smoking."

"If one assesses the insurance ramifications from smoking based on the assumption that smoking is a very risky and dangerous activity, then the consequences involve much more than higher health insurance costs from smokers being treated for illnesses. If substantial risks are indeed present, then smoker mortality rates will be higher as well.

The earlier deaths of smokers who are less likely on average to live through their post-retirement years will in fact provide insurance savings."

Do you believe that?

A. Yes.

Q. And that's a basis of your methodology with regard to the calculation of costs in these cases; isn't that true?

A. It's a consequence of the methodology.

Q. It's a concept that you think ought to be included in the calculation of cost.

A. Well it's a result that you necessarily get if you do the methodology correctly, so this is an outcome, it's not an assumption.

Q. So if smoking kills people before they would otherwise die, the tobacco industry ought to get the benefit of that fact; right?

A. No, we're not giving people benefits and bonuses out here, we're asking the question what would the cost to society have been but for the smoking activity. And for that you have to take into account what is the but-for and what is the trajectory of costs that are actually incurred. You can't assume that people would have lived and incurred costs when they are dead; otherwise, the state is collecting

money that they really never lost because the smokers aren't around to incur these costs.

Q. But a principal premise underlying the approach is that since cigarettes kill people before their time, before their natural life expectancy would run out, that the cost savings associated with that ought to be credited to the tobacco industry in making these calculations.

MR. ATKESON: Misstates his testimony.

A. I agree. I'm not --

Q. You agree with who?

A. I agree with the objection in the sense that I'm not calculating a cost savings, per se. I'm calculating the trajectory of costs associated with smoking and with the nonsmoker otherwise similar, and I'm comparing those trajectories. And it's not giving a cost savings or a cost bonus to cigarette companies to simply recognize the fact that when people are dead, there are no costs that they're incurring. I'm just asking for honest accounting.

Q. Regardless of how you label it, it operates as a credit against whatever the damage claim may be; right?

A. That's your label, it's not my label. Doing the calculation right will give you a lower number than

doing the calculation wrong.
Q. Since smokers are estimated to die sooner, they will spend less time in nursing homes and few will live long enough to collect their retirement pensions. That's your view; right?
A. I'm not sure I use the word "few." This may have meant some will live --
Q. I apologize, I misread it.
Since smokers are estimated to --
A. So you misread the alleged quote? How long have you been misreading quotes?
Q. I don't do it often, and I apologize to you for having done it this time. Let me reread it to you.
A. Well, it's because I caught you.
Q. "Since smokers are estimated to die sooner, they will spend less time in nursing homes, and fewer will live long enough to collect their retirement pensions."
A. I agree with that.
Q. Okay. That's a true and correct statement; right?
A. Yes.
Q. On balance, smokers save society 27 cents per pack from an insurance standpoint; right?
A. I'm not sure what my current numbers are, but

those may have been my numbers then.
Q. As of '95 is what I'm asking. That was your view then?
A. Twenty cents per pack --
Q. Twenty-seven.
A. Twenty-seven cents? Depends on the assumptions. I've got estimates. Some are -- The ones I talk about most often are about 32 cents a pack, but same ballpark.
Q. In the same article you say, "...the group with the greatest amount to lose will not be the tobacco industry, but rather the individual smokers who will suffer an annual welfare loss on the order of $11 billion." What's the basis of that statement?
A. It's calculating the effect of smoking restrictions on smoking behavior. It's their lost consumer surplus.
Q. Is any of that a private cost related to illnesses associated with cigarette smoking or deaths associated with it?
A. No, this is the private loss from the lost utility of not being able to smoke because of the smoking restrictions.
Q. Then in 1995 you contributed a chapter to "TAX POLICY AND THE ECONOMY."

A. That's right.
Q. And your chapter was called "CIGARETTE TAXATION AND THE SOCIAL CONSEQUENCES OF SMOKING"?
A. That's right.
Q. And in your report I believe you tell us that the overall approach that you advocate in the calculation of costs is as contained in this article; right?
A. That's right.
Q. So that it's almost as if we were to append the chapter to the report, we should read them together; right?
A. If you want to.
Q. Well that would be a more complete elaboration of your views than what's contained in three quarters of a page on your report; isn't that true?
A. Yes, it would.
Q. And in this chapter you conclude --
Do you have it in front of you?
A. Yes, I brought it with me.
Q. Terrific. You can follow along and catch me.
A. That's why I brought it out.
Q. Good. At page 51 --
MR. ATKESON: Guys, if we need a cookie break, say so. This banter isn't going to help.

Q. -- on the "EXECUTIVE SUMMARY," the third sentence, "Detailed calculations of the financial externalities of smoking indicate that the financial savings from premature mortality in terms of lower nursing home costs and retirement pensions exceed the higher medical care and life insurance costs generated." Was that a true statement as of '95 as you said it?

A. Yes.

Q. And is that true today?

A. Yes.

Q. So the driving factor financially in offsetting medical care and insurance costs is the premature mortality of the smoker; right?

A. I think this is complicated because it depends on what you call the medical costs. First you have to calculate the medical costs correctly, not adding in medical costs incurred after smokers are dead.

Second, within medical costs you should look at both healthcare and nursing home care costs, and the split in how these things play out differs for the states as opposed to the federal government, so retirement pensions and social security plays a much larger role for the federal government than it does in the state cases.

Q. As you used the terms here, comparing the financial consequence of higher medical care and life insurance costs on the one side, the factor which lowers it and in fact exceeds it is the premature mortality of smokers in terms of lower nursing home costs and lower retirement pensions; right?

A. Yes, but in my analysis I've done the medical care costs correctly, and that's an important proviso.

Q. Assuming that the medical care costs were done correctly, it is the premature deaths of smokers and the cost savings associated with it which wipe out the medical care and life insurance costs otherwise generated.

A. Excise taxes would do it as well, either one.

Q. We'll get to excise taxes.

A. Either one would exceed the magnitude of the medical care costs.

Q. Either one alone?

A. Yes.

Q. If you take a look at page 52 at the bottom, last sentence, you say, "A second impetus for taxation would arise if there were net external costs imposed on the rest of society by cigarette smoking." Do you see that?

A. Yes.
Q. When you say "net external costs" there, what do you mean?
A. If -- For example, if you added up the medical care costs and the other costs and you said on balance we're losing 25 cents a pack, then a 25-cent-a-pack tax would suffice.
Q. And that would be an example of a Pigouvian tax.
A. Yes.
Q. A tax directly related to solving a perceived problem or an actual problem.
A. That's correct.
Q. That would be the short form in your example, the 25-cent shortfall.
A. Twenty-five cent shortfall would be made up by the tax, yes.
Q. In effect the excise taxes currently collected by both the federal and state government are not Pigouvian taxes classically; right?
A. Why not?
Q. I'm asking. Are they?
A. They're a product tax and they function just the same way a Pigouvian tax would, so whether the state legislature knows who Pigou was, or cares, it still

has the same economic effect. So intent does not matter in terms of economic consequences.

Q. In various things that you've written you've made a point of distinguishing cost estimates based on tar adjustments and without tar adjustments; right?

A. That's correct.

Q. What is the significance to you of the differences in tar content of cigarettes?

A. I wanted to adjust the calculations to reflect some measure of the changing riskiness of cigarettes. One index of that might be the tar level of cigarettes, which is often taken as a single summary statistic catchall for the chemical hazards associated with smoking. So using that as a rough approximation for the level of the risk, what happens when you do the tar adjustment? So that was the purpose of my adjustment.

Q. In making that adjustment, you assumed that lower-tar cigarettes are less risky; true?

A. I used that as an example, yes. And I also did the calculations without the tar adjustment in case people did not believe they were less risky.

Q. I know you did. I'm focusing on the tar adjustment for the moment. Underlying premise of the

tar adjustment is that lower-tar cigarettes pose less of a risk and in turn will result in less healthcare costs ultimately.

A. That's true.

Q. What do you know about whether in fact lower-tar cigarettes are less risky, if anything?

A. Well there's some debate about this, and the debate focuses mostly on not whether lower tar is less risky, and I don't think too many people question that, but whether there is compensating behavior on the part of smokers. So do smokers smoke more cigarettes because they're lower-tar cigarettes? So will you smoke five Larks instead of two Marlboros? Well my analysis takes that into account, so I adjust for the changing number of cigarettes that people might smoke. So at least partially we account for changes in behavior.

Q. Does your maneuver account for changes in the manner in which people compensate in the smoking of low-tar cigarettes unrelated to the number of cigarettes they smoke?

A. No. So if you inhale more deeply, for example, that would not be addressed.

Q. And therefore the tar adjustment would be biased in some direction by the failure to account for

inhaling more deeply, for example; right?
A. Failing to account for that hurts the cigarette companies in my calculations and helps the states.
Q. Explain.
A. That's the nature of the bias.
Q. Explain that.
A. The more the tar adjustment kicks in, because of the decreased tar content of cigarettes, the safer cigarettes are, in my calculations. The safer cigarettes are, the longer people will live and the lower the death risk will be so that the cost savings resulting from premature mortality will be less so that all my calculations with the tar adjustment, which in effect makes cigarettes less potent, also makes cigarettes less of a financial gain for the rest of society. So these adjustments actually hurt the cigarette companies as opposed to helping them.
Q. So the tar adjustment means, as you use it, that fewer people die of cigarette smoking prematurely?
A. Yes.
Q. Okay. Therefore they're around longer; right?
A. Incurring medical costs, nursing-home-care costs and everything else.
Q. And therefore they're a greater burden to the state in terms of those various cost items than they

would be had they died prematurely.
A. That's correct.
Q. Are there any other aspects of compensation that you've considered, whether you've adjusted for them or not, other than the number of cigarettes smoked and inhaling maneuvers?
MR. ATKESON: When you say "compensation" you mean compensation to lower tar?
MR. SILBERFELD: Yes.
MR. ATKESON: Okay.
Q. "Compensation" as we've been talking about it here, not dollars.
A. Well we adjusted for the tar leveling, we adjusted for how much you smoke. That's all I took into account explicitly. That's more than anybody else has.
Q. Do you have an opinion as to whether the excise tax on cigarettes currently in place compared to other countries, westernized countries, is too high, too low or just right?
A. I wouldn't ask the question that way.
Q. Okay. You rephrase it for me.
A. I don't care what they do in other countries. In other words, if other countries decide to have a mistake in social policy whether it's with excise

taxes, antipollution policies or whatever, it doesn't mean we have to mimic them. Generally what I found is that in my experience with OECD nations that these people have very little knowledge, compared to the United States, of what their risk policy should be. Our knowledge is much more advanced, so I wouldn't try to copy less-developed nations.

Q. Without reference to other nations, do you think the excise tax on cigarettes that exists today is too high, too low or just right?

A. Too high.

Q. What should it be?

A. From the standpoint of the social cost of smoking, zero.

Q. Why do you qualify it in terms of the social cost of smoking?

A. Well why do you have the excise tax? Are we just interested in a Pigouvian tax? I don't know what you're trying to accomplish with the excise tax.

Q. Well what is the government trying to accomplish, both on a federal and state level, with taxes on cigarettes?

A. With tax on any commodity you're trying to raise money, and it's always attractive to raise taxes from politically vulnerable groups. To the extent that

smokers are a politically vulnerable group you'd want to raise taxes for them, just like nobody's standing up and defending the auto owners or luxury vehicle owners from higher taxes.

Q. Do you agree with the notion that one's future self may make different decisions than one would make if fully apprised of the long-term consequences of smoking?

A. That's been conjectured, I'm not sure if it's true. I'm not sure how much of an effect there would be if the 40-year-old person's knowledge was transferred to the 17-year-old persons. The evidence we have now is looking across sections, and it seems like the teenagers and people around early 20s have a higher risk perception than people when they're older, so I'm not sure what the effect would be of moderating these risk perceptions to make them more like they would be if they were older. It might increase smoking.

Q. In the risk-perception work that you've done specifically about smoking, have you in any way accounted for this phenomenon that I've just described; that is, that one's future self might make decisions different than one makes presently?

A. Well I've analyzed risk perceptions across age

groups, which would get at it. I tend not to subscribe to the -- There's a line of arguments saying that people are irrational and don't understand what their future preferences will be. I haven't seen any evidence documenting that, but I mean, there's been discussions of that in the literature, hypothesis about that.

Q. Take a look at page 66 of the paper we're talking about here. Under section 5 there, the fourth sentence beginning with "What Schelling." Do you see that?

A. That's correct.

Q. It says, "What Schelling suggests is that one's future self may make different decisions than one would make if fully apprised of the long-term consequences of smoking." Do you agree or disagree with that point of view?

A. This is conjecture. I'm willing to conjecture lots of things too.

Q. I'm just asking you sitting here today whether you --

MR. ATKESON: He's trying to answer.

Q. -- agree or disagree.

A. I agree that you could hypothesize that. You could hypothesize that people would be more likely to

smoke today if they understood their future preferences. You could hypothesize lots of things. That's all he's doing is hypothesizing. There's no data whatsoever in this article, none.

Q. Well in any of these hypotheses do you kind of take a real-world look and see if it makes sense, the hypothesis, that is?

A. It's his hypothesis, not mine.

Q. I'm asking --

A. And I've tested a number of things with regard to future selves in terms of, for example, do smokers neglect the future in terms of their rate of time preference, so were smokers more present oriented than nonsmokers, and in fact you find the opposite's the case. So I have a paper on -- new paper on that, where smokers are actually more future oriented, more concerned about future risks than nonsmokers. It's the exact opposite of what Schelling suggests. This is another study done for EPA.

Q. Unpublished.

A. Unpublished.

Q. As yet.

A. As yet.

Q. Will be published?

A. Sent off to a journal a week ago, so I wouldn't

hold my breath.
Q. I just need to know by January, that's all.
A. I wish journals were that fast.
MR. ATKESON: I don't think he's going to testify in January, if that's what you're going on.
MR. SILBERFELD: What is he doing in January?
MR. ATKESON: I don't know how long it's going to take you to put on your case, but presumably Professor Viscusi may not come on until ours.
MR. SILBERFELD: I think we'll call him in ours.
MR. ATKESON: That may be. You've got two shots at him, then.
BY MR. SILBERFELD:
Q. You would set the tax on cigarettes at zero?
A. I see no reason for it not to be zero.
Q. In fact, it's your view that cigarette smoking should be subsidized rather than taxed; isn't that true?
A. Well I think you'd be hard pressed to subsidize any commodity out there. I don't -- There are lots of commodities that we may think are good that we don't subsidize, so I don't think cigarettes would necessarily be at the top of the list. Like would

you put cigarettes ahead of vitamins and organic produce? I doubt it.

Q. From an economic and financial cost standpoint, you believe that cigarette smoking should be subsidized, not taxed; right?

A. I believe that cigarettes provide a subsidy to society, a financial subsidy to society. We don't have pinpoint taxes on all commodities to account for all these externalities. It's just not the norm.

Q. Based upon the estimates that you've derived as to what the true costs are of healthcare associated with smoking and what the true benefits are of taxation, you've concluded, have you not, that cigarette smoking should be subsidized rather than taxed?

A. There's two parts to the subsidy. The subsidy not only affects the optimality of the amount of smoking from the standpoint of the society and that accounting issue, but also affects whether people themselves are making sound decisions. So that unless you were confident that everybody is overestimating the risk, you wouldn't necessarily want, from an individual standpoint, more people to smoke, even though there are societal benefits financially.

Q. Based on all that you know, if it was your decision to set the Pigouvian tax, would you tax cigarettes or would you subsidize cigarette smoking?

A. I'd set it equal to zero.

Q. Okay. Take a look at page 75 of your article, at the bottom, the last sentence: "Taken at face value, these estimates indicate that if one were to set the Pigouvian tax amount based in the 3-percent discount rate results, cigarette smoking should be subsidized rather than taxed."

A. That's what it says.

Q. Is that a true statement as of 1995?

A. That pertains to the social costs, but then there's also the private decision. So there's two competing concerns: First you want to align the social costs and benefits, and that's what this is referring to; but second, from an individual standpoint let's say people now perceive the risks accurately for smoking, and if everybody's right on target, now you don't want to subsidize them because then they're going to start making mistakes, so there are two concerns that would be present. And most importantly, I think from a political standpoint my lifetime would be more short-lived than Governor Wells was if I advocated a subsidy for cigarettes.

Q. Not in North Carolina, sir.
A. Not with Jessie Helms, but probably more broadly in North Carolina. It would still be limited.
Q. And if you would, turn to page 92, third paragraph, second sentence: "A comprehensive assessment of these costs suggests that on balance, smokers do not cost society resources because of their smoking activities, but rather save society money."
A. Right.
Q. Right? And they save society money by dying prematurely; right?
A. That's -- That's essential for it, yes.
Q. Well that's what you were referring to there.
A. And plus you have the excise taxes as well but --
Q. Okay. So they pay excise taxes.
A. And they die prematurely.
Q. And that's how they save society money.
A. Yes.

MR. SILBERFELD: Let's take a break.

(Recess taken from 3:19 to 3:36 p.m.)

(Plaintiffs' Exhibit 3811 marked for identification.)

BY MR. SILBERFELD:

Q. Mr. Viscusi, I want to put before you what's been marked as Plaintiffs' Exhibit 3811.

A. I see it.

Q. You can have it.

A. Okay.

Q. This is an as-yet unpublished article of yours relating to the insurance cost of smoking?

A. That's correct.

Q. Has this been submitted for publication somewhere?

A. Yes, it has.

Q. To what journal?

A. The Journal of Law and Economics.

Q. And has it been accepted, do you know?

A. It's under revise and resubmit, so they've asked for changes and I'll send it back.

Q. Have those changes been made from the draft that's before us?

A. No.

Q. Do you know what the changes are?

A. They wanted a broader -- No changes affect any of the numbers in the paper. They want a broader discussion of now that there's this proposed national settlement, how does this paper change in relation to that, so could I broaden the discussion to include

broader sets of issues.

Q. Such as the settlement and --

A. The settlement itself, it's not just the states anymore. It's -- There are issues in the settlement other than the costs, such as smoking restrictions for teenagers and so on. So they just want a fuller discussion now that we have had a lot of events since I wrote the article.

Q. Have you done that work?

A. No. It's with me in the hopes that I'll have time on this trip.

Q. In terms of this article, Exhibit 3811, comparing it to your chapter on tax policy, is one a fuller exposition of your views on this subject than the other? I don't mean to be picky about whether one has another word in it or another, but this one is more recent, obviously, and therefore I wonder if it's a fuller exposition of your views.

A. The 1995 paper lays out my footwork in detail for the national estimates. In this new article I simply update the national estimates, but then I make them state specific, so I say it's a process that, in effect, is building. One describes the base, and the other describes the next stage of it.

Q. With regard to the state-specific values that

you express in this article and the attachments to it which are the smoking externalities, how did you derive those for the State of Minnesota?

A. The same way I did them for the State of Florida except I put in Minnesota numbers instead of Florida numbers.

Q. Well let's turn to the Florida calculations pages, there's two of them.

MR. ATKESON: Let me just put this on the record. I'm not sure that the attachments you're looking at now have been submitted to a journal. I mean, they're not part of the article, just --

MR. SILBERFELD: Okay. This confusion arises because they came to me together from you.

MR. ATKESON: Right.

MR. SILBERFELD: And I'm happy to separate them.

MR. ATKESON: Well no, I just want them --

THE WITNESS: They are not part of the article.

MR. ATKESON: I just want the record to be clear, and I don't want you to be confused about it.

MR. SILBERFELD: I appreciate that. Let's do this --

MR. ATKESON: We can put a number on the

attachment.

MR. SILBERFELD: Can we stipulate that 3811 --

MR. ATKESON: Is just the article?

MR. SILBERFELD: -- is just the article, through page 36?

MR. ATKESON: No problem.

MR. SILBERFELD: And then we'll make 38 --

MR. ATKESON: Twelve.

MR. SILBERFELD: -- 12 -- Well, let's go off the record a second.

(Discussion off the record.)

(Plaintiffs' Exhibit 3812 marked for identification.)

MR. SILBERFELD: We've had an off-the-record discussion and we determined that Exhibit 3811 should consist of the cover page of the Viscusi article entitled "The Governmental Composition of the Insurance Costs of Smoking," through page 36. Then Exhibit 3812 will be six pages, the first two of which consist of "Florida Calculations," followed by a document called "Table 2," followed by a page called "Manning...Assumptions," followed by two pages that are titled --

MR. ATKESON: He has the four pages, you have the two pages.

MR. SILBERFELD: Okay.

BY MR. SILBERFELD:

Q. In the form in the court's exhibit it will be four pages, entitled "State Cigarette Smoking Externalities." Are we on the same --

A. Page.

Q. -- pages?

A. Yes.

Q. Good.

Starting with Exhibit 3811, at page 2 of the article you say, "Smoking is potentially risky and has expected adverse health effects." What are the expected adverse health effects you were referring to?

A. Mortality and morbidity consequences, so that there are increased risks associated with smoking.

Q. "Mortality" is death; right?

A. That's correct.

Q. "Morbidity" is illness?

A. Illnesses that could affect medical care costs, for example.

Q. Go a little further down. In the fourth sentence you say, "By considering other financial

effects, such as pension costs, the consensus is that cigarettes on balance are self-financing for the country in terms of their insurance consequences," and you cite, for example, the studies of Shoven, Manning, Gravelle and yourself.

A. That's correct.

Q. Do you believe that the consensus of the economic literature is that cigarettes are self-financing?

A. That's what I wrote and that's what I believe.

Q. And by "consensus" you mean what?

A. I've never seen anybody disagree with that.

Q. So it's not a consensus, it's unanimity?

A. To the best of my knowledge. I may have missed something, but that's why I was cautious. But it's unanimous as far as I can tell.

Q. At page 3, in the fourth line, you say, "Cigarette smoking increases costs associated with health care, but also decreases nursing home and pension costs because smoking leads to earlier mortality." That's the same subject we were talking about earlier, that smokers die earlier than they would otherwise die; right?

A. That's true.

Q. The pension costs that you're referring to

there, what do you mean by "pension costs"?
A. Retirement benefits.
Q. Paid by whom?
A. Could be private costs, it could be state costs, could be government, federal government costs. All parties have retirement benefits, all three.
Q. In calculating the impact of pension cost savings because smokers die sooner than they would and therefore collect fewer pension benefits, how have you gone about calculating what the State of Minnesota would have paid to smokers that die early?
A. Well I used the national estimates, and for the state-administered employee pension plans we used the formulas given on the bottom of the second page of the Florida calculations as the adjustments.
Q. Okay. Would you just point that out to me?
A. Pension equals S times per capita supplementation of SSI in Florida, divided by the average state supplementation of SSI, plus 1, minus S, times the average Florida pension payment per recipient, divided by the average state pension payment per recipient. There's also adjustments with respect to state-administered public employee pension plans, but I don't think they're here so --
Q. When you say they're not "here," what do you

mean?

A. I don't think it's -- it showed up -- The procedure is not discussed for Florida.

(Discussion off the record.)

A. We correct for differences in the average state pension payment per recipient.

Q. Let's back up, because I'm a little confused. The pension adjustment that you made in the Florida calculation, Exhibit 3812 and following, is the same one you made for Minnesota? The numbers may differ --

A. Excuse me. Could you repeat the question?

Q. Sure. Is the concept of pension adjustment that you did in Florida the same for Minnesota?

A. I'd have to look. I was not aware that I was testifying on any of the numbers for Minnesota, and these numbers were not prepared for any litigation, so I didn't look into every state's procedures. Some states differ because the rules differ by state, so I'd have to check.

Q. Well if you turn to the second-to-last page, or actually in your set it's the State Cigarette Smoking Externalities page that lists Minnesota, there is a value there for Minnesota, if I'm reading this correctly, at minus 6.3 cents.

A. Right.
Q. How would we go about calculating or recreating that number?
A. That would be based both on state employee pension benefits coupled with the supplementation of SSI benefits.
Q. And what is the source that you used to make the calculation for Minnesota?
A. We had information on employees' hourly benefit costs that we used as an index to do adjustments across states, as well as the information on the number of state employees.
Q. Well did you calculate that directly or indirectly by making some assumptions about what percentage of state employees were smokers and how many of those people died and so forth? How was it done is what I want to know.
A. Oh, the assumption would be that the average mix of people in terms of smoking was uniformly distributed across society, so that state employees were smoke -- you know, just as likely to be smokers as non-state employees.
Q. Is this all done on a computer program?
A. Yes.
Q. And can you download that to a disk?

A. I'm not sure I will.
Q. Can you?
A. I could.
Q. And that would have contained within it all the maneuvers?
A. Yes.
Q. Are you unwilling to do that?
A. I see no reason to do that.
Q. I take --
A. It's not part of my testimony. I was not paid by them to do the analysis. It's not part of my expert report for them. This is an article I did on my own. They provided no financial support for it, so if I'm going to do this not only would I want their permission, but I'd want their reimbursement for my work. This was academic independent work I did.
Q. Whatever work you did is done; right?
A. It's done, yes.
Q. And it has a value.
A. Yes, and I do not give away work for free.
Q. And it's that value for which you'd like to be compensated if you're going it turn it over.
A. That's correct, and I would rather -- my procedure is to publish articles first and then

release the data. That's the general practice in economics. So if you were to make things available for replication, you do that after you've published something, not before.

Q. Well we have a number here, Mr. Viscusi, to the State of Minnesota that seems to indicate that on a per-pack basis the State of Minnesota is about 9 cents ahead per pack by your calculation and therefore actually makes money from the fact that cigarette smoking occurs and lots of people die every year prematurely; right? The state's ahead.

A. When you add up everything, on balance the state is ahead 9 cents, excluding excise taxes.

Q. Okay. And having been designated as a witness here, I want to understand specifically and in detail how you got to the 9 cents, and we can do it one of two ways: You can either tell me how to do it so that I can replicate these numbers, or my formal request to you and your counsel is that the computer data be turned over to us so that we can replicate the figures.

MR. ATKESON: Well Roman, you understand that he's not being designated as an expert on any specific calculations and this was not part of his report, and the only reason this even came up is

because you called me yesterday and said this was a discussion in the Florida deposition, could you send me this, and I said I'd be happy to.

But the witness is correct, I mean, the person who's going to be testifying on our behalf on specific numbers in Minnesota is Professor Ed Foster, and he's the one who will be put forward by us with any specific calculations.

MR. SILBERFELD: Well I think I'm fairly entitled to test the proposition that he is going to testify about, which is the methodological issues in calculating costs which is gone into in some detail both in the report, in the tax policy chapter and in this article.

MR. ATKESON: Well Roman, I don't know whether there's a misunderstanding here, but if you read the tax policy article, the tax policy article is how do you take Manning's numbers and update them to nineteen ninety whatever year it was, '3, '5.

MR. SILBERFELD: Five.

MR. ATKESON: Whatever year he did it. This article that you're looking at now goes way beyond that and says how do you take the updated numbers and break out of that national state-specific numbers. Okay. He's not testifying about that

methodology. That's going to be Professor Foster's role in this case, so we've gotten into an area in which he's not been designated here and I'm -- I don't believe you are entitled to just tell him he's got to, you know, produce it or to tell us that we've got to produce it.

MR. SILBERFELD: I can't make anybody do anything, but a court can, and so I want to make a formal request --

MR. ATKESON: I understand.

MR. SILBERFELD: -- for it. If that formal request is refused, and I'm happy to let you think about it overnight and tell me what your final answer is tomorrow and then we'll take it up. I just maintain that you can't fillet with a laser what the areas of testimony are going to be. The man has been designated on these topics, and we don't need to argue about it on the record a lot, but he's clearly been designated --

MR. ATKESON: Well we're not filleting with a laser, but going from national to state-specific numbers is a big jump and we've designated one witness to deal with that entire topic, and you're going to have a full 12 hours with that person on that.

MR. SILBERFELD: I maintain that I'm entitled to this information. I would ask you to consider it overnight. We'll take it up tomorrow and we'll see what happens from there. How's that?

MR. ATKESON: Okay.

BY MR. SILBERFELD:

Q. Returning to the Minnesota numbers, as you sit here today, are you able to describe to me each step of the calculations you did to come to each of the numbers that are reflected on this page for Minnesota?

A. No.

Q. Are you able to tell me what each assumption is that you made for each of the maneuvers that you engaged in to come to these numbers for Minnesota?

A. Well they're laid out for both the state of Florida and the state of Mississippi in either the paper or the attachments, so the --

Q. All right.

A. -- methodology's there.

Q. Okay.

A. I just put in different numbers for Mississippi or Minnesota, as the case may be.

Q. And are the numbers -- Pardon me.

Are the source of the numbers the same even

though the actual values will be different? That is to say, for Florida under this pension adjustment you used, the state-administered public employee pension plan. Did you do the same for Minnesota, I guess is what I'm asking.

A. The procedures were the same and all the sources are listed in the appendix to the article. Sir, for pensions, they appear on pages 32 and 33.

Q. So by reference to the appendix, which runs from 30 through 34, we can get at all of the source materials that you used.

A. Every reference is in there.

Q. Are there any adjustments, assumptions or calculations that you made that are not contained on the Florida calculations pages?

A. I think when we say the "Florida calculations for pensions," since there's two adjustments made at the state level, the first was -- was with respect to SSI, that is there, then we say the second is in reference to state-administered public employee pension plans. That one's not here because it follows the Mississippi calculations. But this essential -- these two pages lay out the formulas, with the exception of one formula which is discussed in the text for Mississippi.

Q. Let me refer you to page 4 of the article, in the second full paragraph that begins "Although taxes." Do you see that?

A. Yes.

Q. The second sentence reads, "If smoking decisions are not optimal, either because of failures in individual decisions or societal externalities, cigarette taxes could serve as a form of Pigouvian tax to align the private incentives with social objectives."

A. I see it.

Q. Currently are cigarette smoking decisions optimal, in your view?

A. No, but I believe -- because I believe people, on balance, overestimate the risk. So from a private standpoint they may be discouraged too much, and they're discouraged from smoking by excise taxes which are too high relative to any calculation of the net social costs.

Q. In order to optimize the balance in decision making you suggest here, do you not, that cigarette taxes could align the private incentives with social objectives.

A. If there's a problem, you could use taxes to solve it.

Q. Well there is a problem, isn't there, in terms of risk perception?
A. It goes the wrong way, though. A subsidy would fix that.
Q. So cigarettes and cigarette smoking should be subsidized because of the overassessment of risk.
A. If all you care about is aligning private decisions with what would happen in a full-information world, on balance, a subsidy would do that, but I think more accurate risk information would be an easier way to do it.
Q. How do we get to more accurate risk information from a risk-perception standpoint in 1997 given 30 years of information such as we've had?
A. No, I don't call what we've had "information" so much as an antitobacco campaign. That's different than trying to convey to people the true risk. And at -- Once you reach a point that people are cognizant of the risk and understand the risk, I would recommend that public health officials turn their attention to other things like heart disease, lack of exercise. There are other risks out there, although it may be convenient and politically saleable for them to continue to go after smoking. I would address other hazards that are perhaps not as

well understood.

Q. Is it your view that the government in the United States is on an antismoking campaign?

A. Yes.

Q. Is it your view that the American Medical Association is on an antismoking campaign?

A. Well I think the American Medical Association has a narrow agenda so that they're not promoting social welfare maximization. Their special topic of interest is health, and to the extent that they have a health-oriented focus, they're going to focus on that concern. That will give you a different answer than if you're trying to do a more balanced welfare maximizing concern.

Q. Is the answer to my question that the AMA is on an antismoking campaign?

A. They certainly have an antismoking attitude and they have made some reckless statements, yes.

Q. How about the American Cancer Society? Are they on an antismoking campaign?

A. I don't think they're on a pro-smoking campaign so I'd put them in the antismoking group.

Q. How about the American Lung Association, are they on an antismoking campaign?

A. I'm sure they are.

Q. How about the World Health Organization, is that organization on an antismoking campaign?
A. I don't know. I'm sure smoking's on their agenda.
Q. At page 10 of the article you use the figure, roughly in the middle of the page, of the value of life equaling five million dollars per life. Earlier I think you said 3 to 7. What's the basis of the five-million-dollar figure?
A. It's the midpoint of the three- to seven-million-dollar range.
Q. Is that based on studies?
A. My wage risk trade-off studies.
Q. Your own work.
A. And other people's.
Q. Who else?
A. There's a whole list of them in my 1993 article that you handed out this morning.
Q. Turn, if you would, to page 12. You describe here in the third line, or second line, rather, that "The emphasis of this article is on a more complete social accounting since there is no economic justification for selective inclusion of the different cost components when determining net financial consequences." That's your view?

A. Yes.
Q. In coming up with a complete or a more complete social accounting, should all factors that affect society be included?
A. If I'm accounting for financial costs, yes, count all the numbers.
Q. Should an altruism value for the life lost and the injury incurred be included in a more complete social accounting of these costs?
A. This was asked and answered this morning.
Q. I'm asking it in this context.
A. I'll answer the same way I answered this morning: A, we're doing an accounting of the financial costs and altruism is a nonpecuniary cost; B, if you're going to do a social welfare calculation, if you're going to look at altruism you have to ask should in fact that be recognized as a legitimate concern given the --
(Interruption by the reporter.)
A. -- fact that I, for example, might suffer a loss in welfare from you wearing white shirts, that that shouldn't necessarily be counted in a democratic society; and finally, if you want to do that more complete social accounting you have to take into account the welfare gain to smokers from smoking.

But that's not what this is all about. This is an exercise to calculate financial cost to the state. That's what all the complaints say, as far as I can tell.

Q. In coming up with a more complete social accounting, should the contribution to society that those that have died might have made be counted?

A. No.

Q. Why?

A. If you're dead, people should not hold you responsible for what you could have done had you been alive. It's like sending somebody a bill after they're gone. I mean, it makes no sense whatsoever.

Q. Is there published literature about social accounting, as you use this term here?

A. Benefit/cost analysis, yes.

Q. No. The word "social accounting," is that a term of art I guess is what I'm asking for, or is it your term?

A. It's not -- It's -- just happened to come up here so, you know, it's not a -- you can't look up in textbooks and see "social accounting." To the extent that it comes up, they may talk about social accounting for GDP or something, but that's different than this.

Q. If you would, take a look at page 15. In the fifth line, in describing the tables -- the three sets of estimates in Table 1 you use a 20-year moving average for cigarette tar content. Why did you pick 20 as opposed to some other time lag?

A. I did it with lots of different time lags, and there's a general sense that it's probably longer than 10 in terms of the length of time, so 20 seemed to be a reasonable approach, shorter than 30. But it doesn't really make much difference. Originally I cranked out tables for 10 years, 20 years, 30 years, 10 years point estimates, 10 years lag year by year, so we had a whole pile of analyses done every which way, but for reasons of length the editor wanted us to only show one or two for illustrative purposes and that's what we did. But the original draft article had many, many more, but the conclusions were not sensitive to them.

Q. The "conclusions" meaning the numbers didn't move significantly either at 10 or at 30?

A. That's correct, in terms of smoking paying its own way.

Q. At page 16, the end of the first paragraph, you write, "Group life insurance cost average $0.14 per pack, as smokers' earlier expected mortality

increases the present value of life insurance costs." That's actually an increase to the cost structure, isn't it?

A. Yes.

Q. Life insurance companies charge more in premiums for smokers than they do for nonsmokers.

A. And if they do it's not a social externality so --

Q. It's a private cost.

A. It's a private cost.

Q. But they do so because of the understood earlier mortality or death of smokers?

A. Yes.

Q. Could you turn to page 20. There's a mention there in the first 10 lines or so about the rate of federal matching between the federal government and the state government for Medicaid costs. You see that?

A. Yes.

Q. And for Mississippi the matching rate was 79 percent.

A. That's correct.

Q. What is it for Minnesota?

A. I don't know.

Q. Where would I find that?

A. I don't know. Do we say that in the appendix?
Q. I don't know. Do you say that in the appendix?
A. Healthcare state rankings, published by Healthcare Finance Administration.
Q. What page are you on?
A. Thirty.
Q. So the Healthcare State Ranking in 1995 would answer the question what the matching rate is as between the federal government and Minnesota?
A. Yes.
MR. ATKESON: For a particular year.
MR. SILBERFELD: Right.
Q. For 1995.
A. Yes.
MR. ATKESON: Actually I think it tells you for 1993.
MR. SILBERFELD: Of course, it's a government document.
Q. At page 22, having to do with the pension calculation, is there a reference in the appendix to the source of the information about the proportion of pension payments paid by each level of government in the private sector?
A. There is information about the state employees that's discussed on pages 32 to 33, state and local

employees, as well as private pension costs.

Q. Does Minnesota supplement federal SSI payments?

A. I don't know. If they don't, we don't count it. If they do, we do.

Q. And if they do, you somehow incorporated it into the formula?

A. Yes.

Q. So it would not be a zero, it would be some value?

A. If they do it, it would be some value.

Q. And what would I look at in the appendix to make that determination?

A. The information on state SSI supplementation came from page 292 of the Social Security Administration Annual Statistical Supplement, 1994.

Q. Did you give me a page number for that?

A. No, I didn't.

Q. The Annual Statistical Supplement for --

A. Page 292, I'm sorry. I did.

Q. Oh, I see. And then turning to the figures, referring now just to the State of Minnesota, let's talk about these for a minute.

A. These new or old?

Q. I have no idea. Can you tell?

A. Oh, old.

Q. Okay. So let's turn to the new ones which are part of 3812. Why do they differ, by the way?
A. There was one parameter that was not adjusted for each different state, so we increased the number of parameters that were adjusted.
Q. What does that mean?
A. One number in the earlier draft we used an average for all the states.
Q. Of what?
A. I forget. In the medical cost calculation, so there's one number for which it was not state specific, it was a national average.
Q. Yeah.
A. So it was refined to make it state specific. So --
Q. And that caused all the numbers to move ever so slightly?
A. By like a penny in the thousandth point. So --
MR. ATKESON: A tenth of a penny.
A. Tenth of a penny. So it was a tenth-of-a-penny effect.
Q. Okay. In the Exhibit 3812 which is the newer set of numbers, let's just read across quickly and make sure that I understand what you've done here.
You assume that the State of Minnesota collects

excise taxes of 48 cents a pack?

A. Wrong. I didn't assume it. I got it from the Tobacco Institute.

Q. From who?

A. The Tobacco Institute, Tax Burden on Tobacco publication. It's not an assumption, this is data.

Q. Well you're assuming this is correct.

A. Okay. But it's not like, you know, a hypothetical. So this is based on something I could cite.

Q. But you didn't independently verify the accuracy of that number.

A. No, I didn't.

Q. The medical care costs are assumed to be 3 cents a pack.

A. No, they're calculated to be 3 cents.

Q. The nursing home calculation is a savings of about 8 cents a pack.

A. That's correct.

Q. And that's because smokers die early and don't spend time in nursing homes subsidized by state Medicaid costs.

A. That's right.

Q. Pensions save the state 6 cents, roughly.

A. That's right.

Q. And again, those are monies not paid out by the state because smokers die early.
A. That's correct.
Q. Taxes on earnings is a category we haven't talked about. Describe that to me. How does that work?
A. Because of their premature mortality, they do not contribute as much to state pension plans so to the state that would be a revenue loss.
Q. So the state loses about 2 cents a pack, the State of Minnesota?
A. Is that the .020? Which number is -- Which number -- I'm trying to match it.
MR. ATKESON: The fifth number up from the bottom.
A. Point 18?
Q. Yeah. About 2 cents a pack.
A. Okay.
Q. Right?
A. That's right.
Q. So because smokers die earlier than nonsmokers would otherwise die, the state loses taxes on the earnings that those people didn't earn and therefore didn't pay taxes on.
A. That's right.

Q. And that's about 2 cents a pack; right?
A. That's right.
Q. And then adding and subtracting the first five columns --
A. No. We also throw in things like sick leave, fires, little stuff, so -- adding and subtracting the first five columns and throwing in the little stuff --
Q. All right.
A. -- gives you the total.
Q. Well --
MR. ATKESON: The "little stuff" is all described in the article.
MR. SILBERFELD: No, I understand.
Q. But each one is no more than a penny a pack, as I recall.
A. That sounds plausible.
Q. So if you start out -- If Minnesota starts out with 48 cents in the bank --
A. No -- Well, that's not part of the total.
Q. What's not part of the total?
A. The 48 cents. The total excludes the 48 cents.
Q. Okay. So if Minnesota starts out spending 31 cents --
MR. ATKESON: No, 3.1 cents.

Q. Three cents, I'm sorry. Three cents on medical care, and then saves 8 cents because of the nursing home cost savings --

A. So they're up a nickel.

Q. So now they're up a nickel. They save another 6 cents, they're up 11.

A. Eleven cents.

Q. They lose 2 cents, they're up nine, and that's, give or take, roughly the total that you have there.

A. That's right.

Q. The 48 cents of state excise tax is just a reference point, in other words.

A. Well it's the other financial component. So for another article I've written I've added the 48 cents with the 9 cents and you get 57 cents. So I do the total as opposed to keeping them separate.

Q. So in fact what you're saying to us is that the State of Minnesota, by reason of cigarette business and the health effects the way it's been done, is actually about 57 cents a pack a cigarettes ahead for each and every pack sold during the relevant time period.

A. That's what you're ahead now. When the taxes were lower, you weren't ahead as much.

Q. Current date.

A. Correct, this is current time.
Q. Have you done any calculation to adjust this figure for the period 1978 to 1996?
A. No.
Q. How would you go about doing that?
A. Well you'd look at all the parameters and see how they varied. Nursing home utilization rates, Medicaid formulas, number of state employees, go through all the parameters in the analysis and change them.
Q. You'd have to do that year by year.
A. If you want to do it accurately by year, that's what you'd do.
Q. Do you have an understanding what it is that the State of Minnesota and Blue Cross and Blue Shield are claiming in terms of the time scope of their damages?
A. I don't recall. I did read the complaint, but I don't recall the time frame.
Q. Do you know whether it includes expenses out into the future at all?
A. I have no recollection how far back in the past it goes, where in the future it goes. I'm just here to talk about my research.
Q. In your CV there's a fair amount of work you've done over the years on the topics of tort reform. Is

that a fair assessment?
A. I've done some work in that area, yes.
Q. What are your views about whether the civil justice system works in terms of having a deterrent effect in the area of unsafe products?
A. The general result that we found is that for low and moderate levels of liability you get a deterrent effect, but for very high levels of liability you get a counterproductive effect where firms, in effect, withdraw new products, shut down controversial lines of research, and so that it has an adverse impact.
Q. When you say "levels of liability," what do you mean?
A. We calculate an index of liability by industry in terms of the liability costs per unit sales in the industry, and we show that measures of innovation, new products, product changes and so on are increased by higher levels of liability for low and moderate levels of liability, but severe levels of liability have a harmful effect.
Q. Can you give me an example of a low, medium and high level of liability, industry or company?
A. Private aircraft industry would be a high level of liability. A high level of liability for contraceptive manufacturers would be another one.

But we did it using all industries in the economy, so it was not a case-study article.

Q. Sort of a macroeconomic article?

A. Well it was using statistics by industry on the liability cost. We matched it with firm-specific information on innovation. So it was a fairly detailed statistical analysis of product decisions.

Q. And the measure of whether the civil justice system had an effect on safe or unsafe products, as the case may be, was the extent to which a firm engaged in innovation or failed to do so?

A. It was the extent to which the firm introduced new products, developed patents, et cetera. We had a variety of measures of innovation, including those, and how those related to the liability costs relative to sales for that industry.

Q. And based on that you concluded that low and moderate levels of liability were not negatively impacted by the civil justice system?

A. No, low and moderate levels of liability fostered innovation, so the effect where you would say that tort liability could promote new products, safer products, --

Q. Yes.

A. -- that was true for low and moderate levels of

liability, but for high levels of liability you did not get that effect. It simply discouraged new products, shut down innovation, firms exit the industry, pharmaceutical companies stopped doing contraceptive research and so on.

Q. Private aircraft manufacturers, contraceptive manufacturers are examples of high levels of liability?

A. I'm not sure those were ones in our data set but those would be examples of high-liability industries.

(Recess taken from 4:31 to 4:43 p.m.)

BY MR. SILBERFELD:

Q. Mr. Viscusi, in the time remaining today I want to turn to your opinions about market-share liability that's contained on page 1 of your report. First, is it your understanding that there is some notion of market-share liability or a variant of it being claimed by the State of Minnesota or Blue Cross\Blue Shield?

A. That's what I've been told.

Q. And who told you that?

A. Mr. Atkeson.

Q. And what is your understanding as to what the claim is or how it's framed in terms of market-share

liability?
A. I don't know. I haven't gone into it beyond that, the fact that this concept may come up.
Q. You've addressed market-share issues before, have you not?
A. Yes.
Q. You've probably read some of the court opinions that have adopted market share.
A. Yes, and some that haven't.
Q. The Sindell case in California, for example.
A. I've read portions of that.
Q. Some of the other market-share decisions throughout the land?
A. Yes.
Q. And states like Illinois that have failed to adopt or refused to adopt market share.
A. I'm not sure I've read Illinois's, but I've read at least five or six of them.
Q. And fair to say that the approaches to market share taken by the various states is different?
A. Some states recognize market share, some states don't.
Q. Those that do have variations among themselves as to the versions or types of market-share liability that they're willing to adopt. Is that fair?

A. I haven't looked into that.
Q. There are stated here seven reasons, the top seven reasons why market-share liability isn't appropriate for cigarette litigation. Is that a fair statement of this first page and the first paragraph on the next page?
A. Yes.
Q. The first is that market-share liability shouldn't apply because the smoker knows the identity of the cigarettes he or she is smoking and therefore there's no informational inadequacy to be addressed. Right?
A. You actually lose information. You're throwing away information by going to market share.
Q. To the extent that the State of Minnesota and Blue Cross\Blue Shield are seeking to recover on the basis of market-share liability, what does the State of Minnesota know about the brands of cigarettes smokers smoked to the extent that they're still alive?
A. The individuals themselves know the brands they smoked.
Q. What does that have to do with the State of Minnesota?
A. They're collecting for the costs generated by

these individuals.
Q. Are you suggesting that before healthcare is rendered or made available to these individuals that they should have taken a history of them and found out what brands of cigarettes they smoked?
A. One thing you do is sample them now and figure out what the cigarettes -- brands that people smoke now so you could actually go out and get information on that.
Q. And if you went out and looked at the current population of people receiving Medicaid benefits in this state and you asked each of them the brands of cigarettes that they smoked, would you regard that as a reasonable sample for determining what smokers over the last 30 years have smoked?
A. No, because the brands have changed over the last 30 years. This just gives you one piece of information.
Q. So how would you go about determining, with precision, the brands of cigarettes smoked by each and every smoker who received Medicaid benefits in the State of Minnesota between 1978 and 1996? And I'll represent to you for these purposes that that's the bracketed time frame of the state's claim.
A. Nineteen seventy --

Q. Eight to ninety-six.
A. Well, you could interview people regarding their smoking habits to the extent that they're still alive, get the history of their smoking behavior.
Q. And how would you deal with those that have died?
A. Probably need some model as to who's living, who's dying and what selection bias you get because of the people who are dead. Are they more likely to be dead because they smoked different kinds of cigarettes?
Q. That approach would carry with it, would it not, some amount of error?
A. It certainly would.
Q. Is that error, using that approach, greater than or less than the error associated with market-share liability? If you know.
A. How am I doing the market-share liability calculation? The average share of cigarettes sold in the country by brand?
Q. What's an appropriate way to do it?
A. I'm not sure we have state-specific information by year on sales by brand, but you'd want to make it state specific. So if you used national numbers, that's a source of error.

Q. Did you finish?
A. I'm finished.
Q. Okay. In terms of identity of cigarette smoke, how would you deal with error associated with the fact that people may have switched brands?
A. That's if you ask people what brands they've smoked over time, had you always smoked Marlboro's did you used to smoke Camel's, Chesterfield's, try and get some sense of what they smoked at different points in time.
Q. And in the 18-year period involved in this case, if we had a smoker that we could interview today and we found out that over the 18 years he smoked Marlboro's nine of the years and smoked Camel's the other nine, how would you weight the apportionment, if any, of the costs to the two products?
A. That's -- That's down here, but that's tough too. You don't really know.
Q. Is that a market-share notion or is that an apportionment-between-known-parties problem?
A. It's not point 1, it's one of these other problems, point 3 or point 2. So looking at my list, it's from a different point.
Q. Okay. On balance, if the state, through no fault of its own, is unable to identify the brands of

cigarettes smoked by people who received Medicaid benefits between 1978 and 1996, is market-share liability, however it might be done, an approach to be considered?

MR. ATKESON: I'm going to object to that question, lack of foundation.

A. I see no reason why you can't ask people.

Q. If they're alive.

A. You can certainly find out the answers from those who are alive, and you could do statistical adjustments to take into account any biases for people who are dead.

Q. Your second point as to why market-share liability is not appropriate for cigarette litigation is that cigarettes are not a homogenous product. In terms of their disease-causing potential, cigarettes are a homogenous product, are they not?

A. I've never heard anybody say that.

Q. You just did.

A. I know. Not until today.

For my own part I would rather smoke a Lark cigarette than an unfiltered, imported, British cigarette.

Q. Why?

A. Much lower tar and nicotine content, so I would

regard it as a safer cigarette.
Q. Depends on how you smoke it, though; right?
A. I'm talking about smoking it the same way, smoking the same number. And I'm not sure there's any way I could smoke a Lark cigarette to make it as risky as a Galois cigarette.
(Discussion off the record.)
Q. In the example I gave you a moment ago about the 18-year smoker who smoked Marlboro half of the time and Camel half of the time and in 1996 is diagnosed with lung cancer, how could it be determined what part of the lung cancer was attributable to Marlboro as opposed to Camel?
A. Yet another reason why market-share liability is a problem. That's exactly what I'm saying.
Q. Isn't the --
A. The stuff is so uncertain that you can't make linkage.
Q. Isn't that same problem present whether or not you use market-share liability? If that smoker brought an individual lawsuit for his lung cancer injury and sued only the manufacturer of Marlboro and the manufacturer of Camel, wouldn't that same problem be present?
A. It's basically a proportional liability concept

taken down to the individual level, so it's the same structural problem.

Q. You say in the paragraph that begins "second," "How these different products should be weighted in the market-share concept has not been scientifically determined since there are no reliable estimates of the risk probabilities associated with different cigarettes." Can the products be weighted by their tar content?

A. We discussed that this morning and look at all the controversy I created with you about that. This remains a controversial adjustment because you don't know how people smoke cigarettes, and we don't know for sure that the dose-response relationship is linear with respect to tar as opposed to other cigarette ingredients. So I thought that was a convenient thing to do for my article, but it doesn't pinpoint risk in a way that everybody would accept it.

Q. In the third paragraph you indicate that the product and the market have changed substantially over time. How has the market changed?

A. Well the kinds of cigarettes people buy have changed, in addition, who buys them has changed. Women buy cigarettes more than they used to, so that

aspect of the market has changed. Virginia Slims and other products for women didn't exist before. So the mix of products has changed, the mix of consumers has changed, and even individual products like the Camel cigarette of today is not the same as it was 40 years ago.

Q. How is it different?

A. Different tobacco mixtures.

Q. How do you know that?

A. I've discussed this with R.J. Reynolds' officials.

Q. Really?

A. Yes.

Q. Who?

A. I don't remember their names. This is back when I was doing work on the Premier. I met with them and discussed cigarettes and how they've changed over time.

Q. Were you told anything about whether those ingredients in cigarettes that are implicated in causing disease have changed over time?

A. There's a general sense that cigarettes have less of a kick, in some sense, than they did before, so in terms of the effect on the smoker, they're less potent, however that's measured. I don't know how

that relates to disease-causing characteristics.
Q. Do you have an understanding as to how many different components there are in tobacco smoke?
A. Lots. That's all I know.
Q. Thousands?
A. Could be. Lots of chemicals.
Q. Do you know how many of them are carcinogenic?
A. Lots of them, and it's true that there are dozens, literally dozens of carcinogens in coffee. It's a question of how potent these carcinogens are. So, for example, lettuce is carcinogenic, but I eat lots of it; apples are carcinogenic, but I eat it; beer and wine are carcinogenic, but I still drink. So you care about the magnitude of the risk, not counting up carcinogens.
Q. Do you regard tobacco smoke to be at the same level of carcinogenicity as lettuce?
A. Depends on how much of the smoke you're exposed to. So a small enough quantity of tobacco smoke does have the same carcinogenic potency as a head of lettuce. A head of lettuce doesn't have as much carcinogenic potency, and there's other health benefits of lettuce.
Q. Does a smoker who smokes a pack a day for 20 years and eats a green salad a day for 20 years have

an equal risk of contracting cancer from those two substances?

A. No, smoking's much worse.

Q. Under fourth you say, "The nature of the risk linkages and the lag times involved for any health effects are not precisely known." Would you explain that, please?

A. That's basically the issue that you alluded to in your previous question. Somebody smoked Marlboro's 10 years ago, they smoked Chesterfield's 20 years ago, they have lung cancer now. Which product did it, if either one of them? And what should be the relative assignment of responsibility to Chesterfield's as opposed to Marlboro's? I don't think we know any of those answers.

Q. Does the fact that those things are not known -- Well, withdraw that.

Is the unknown nature of those answers peculiar to the market-share context or to any claim brought by a smoker for health effects? In other words, is it peculiar to a market-share analysis?

A. This would be true of any smoker claim, but it would be broader for market share because you have so many people and big aggregation problems, so you have less precise information regarding exposures, times

of exposures, you don't even know what cigarettes people really were buying in the state probably.

Q. Under fifth, "The risks that have been estimated for smoking are not uniquely caused by cigarettes." And you refer here to DES, and I take it you're referring to clear cell adenocarcinomas being the signature disease?

A. Right.

Q. Wouldn't the simple solution to the problem you pose here be to take what the surgeon general regards as the percentage of lung cancer cases, for example, that are attributable to smoking and count those? Rather than a hundred percent of lung cancers, count 80 percent or 90 percent? Wouldn't that be a solution to this problem?

A. These are still estimates, and some courts have ruled that if there's no signature disease we're not going to let market share in because there is more error. Once you move away from signature diseases, by necessity you have some error. The surgeon general's estimates are estimates, they're not facts.

Q. Well what court has ruled that you've got to have a signature disease to impose market-share liability?

A. I've read one decision, I don't have it with me,

and I don't -- and since I'm not a lawyer I don't care much for case-name memorization. One court ruled out market share and one example, the reason why he did not let it in is that the case that they were considering did not involve a signature disease, whereas DES did and that would have made them more likely to be favorable to market-share liability. It may have been Ohio, if I were to guess, but I really don't recall.

Q. At the time you wrote this report about market-share liability, specifically the sixth paragraph where you say, the cigarette market and consumption of cigarettes is not limited by time. I take it you didn't know that Minnesota's claim is limited by time to an 18-year period.

A. Your claim is not limited by time, the consumption of cigarettes is not, and consumption of cigarettes took place before the time period so it may be difficult to disentangle what effects are due to consumption during your time period as opposed to consumption outside of your time period. That's another source of error.

Q. Given the concept of latency, we would expect that all the consumption that lead to disease took place outside the time period of 1978 to 1996.

Wouldn't you assume that?

MR. ATKESON: Are you going to stipulate in this case that the people who you treated in 1996, you're only counting their smoking before 1978?

MR. SILBERFELD: No. I'm just asking a question.

MR. ATKESON: Well your question -- Hold on. You say: Given the concept of latency, we would expect that all the consumption that lead to disease took place outside the time period of 1978 to 1996. And you're saying "we" meaning you, the plaintiffs.

MR. SILBERFELD: No, Mr. Viscusi and I. We're the ones here talking. I'm just asking a question, counsel, I'm not stipulating to anything. Let him answer the question.

MR. ATKESON: I'm just -- Let's be clear, then, that the plaintiffs are not saying that. The plaintiffs are not taking a position on that.

MR. SILBERFELD: I'm just asking a question about latency that relates to -- Let me just rephrase it.

MR. ATKESON: Okay.

BY MR. SILBERFELD:

Q. That relates to this problem that you pose at the bottom of this page that market share shouldn't

apply because the consumption of cigarettes is not limited by time, and I'm asking you doesn't the concept of latency allow reasonable limitations of time relative to the idea of consumption so that if you have a disease you can count backwards from some statistical information and medical information about latency?

A. The more you have a latency period or the longer the latency period, the more likely it is you have to go back to an earlier time frame and go outside of a particular time frame, and the more error you're going to get in the analysis.

Q. The longer the time frame, the greater the error?

A. The greater the latency period, the more uncertainty there is with respect to the length of the latency period, the greater is the error.

Q. Finally, at the top of the second page of your report you say, "There are additional problems yet to be resolved with regard to consistent application of market share across states." That doesn't have anything to do with the State of Minnesota, does it?

A. When all is said and done you want market-share liability to -- levied to correct costs on cigarette companies, assuming that there's a reason for

liability. And unless states coordinate how they do their market-share calculations and how individual suits will be handled, you may get payments that are too great. So it depends on the extent to which, for example, you single out well-known brands in specific lawsuits. So you want to do it in a way that's coordinated across states systematically.

Q. If your goal was to apportion, and again I'm not suggesting that this is what we're claiming at all, but if your goal was to apportion liability across all cigarette firms for Medicaid costs incurred by the State of Minnesota, how would you suggest that be done?

A. Well fortunately there's nothing to apportion because on balance you save money and the state saves money.

Q. Assume they don't.

A. Then you want to calculate the share of the medical costs attributable to each firm.

Q. And how would you go about doing that?

A. Get data on individuals and the cigarettes they smoked and try and track down what the risks are, but this is difficult. The more difficult it gets, the more market-share liability fails as being an appropriate mechanism for either deterrence or

compensation and the more it's counterproductive. So even proponents of market-share liability in the legal literature recognize that if there's error, market-share liability is counterproductive, it has bad effects. The more the error is, the worse it performs.

Q. Assuming that you cannot match up particular cigarettes smoked to a particular disease process that resulted in payment by the state, and assume for purposes of this question that the state isn't ahead as you suggest they are, how would you calculate the apportionment of those costs across the cigarette companies in this case?

A. I wouldn't. Given the errors that are involved, I think you should essentially fold your -- fold up your tent and go home. I mean, I think that you should close shop.

Q. Can't be done.

A. Can't be done. This is not a good case for doing market-share liability.

Q. I'm not suggesting what we're talking about now is market share. I'm just talking about apportionment.

A. I think the same uncertainties tend to affect apportionment more generally.

Q. Why?
A. Let's say there's only two cigarettes out there, Marlboro's and Camels. Who should pay what? I don't know how to divide this up, and the more error there is, the less you're doing something reasonable, the more you're being capricious with your award.
Q. Well shouldn't those two firms be jointly and severally liable for the whole thing?
A. Why?
Q. I ask the questions.
MR. ATKESON: Again you're asking him for an economic, not a legal opinion.
MR. SILBERFELD: Yes.
A. I've never heard any economist endorse joint and several liability as an economic principle. I mean, it's adopted in many jurisdictions but I've never heard an economic argument in favor of joint and several liability.
Q. How about deterrence.
A. I like deterrence.
Q. I'm sorry?
A. I like deterrence.
Q. Does it work, does joint-and-several liability work for deterrent purposes?
A. Well the trouble with joint-and-several

liability is that you -- overdeterrence for the firm that's stuck picking up the tab for all the firms that are gone, so they're excessively penalized. It's not appropriate. If people have exited and you're liable for their share, it's certainly not appropriate. What we found also with Superfund is that certainly you're not getting sound deterrence, I mean, it's a disaster and that's a classic joint-and-several liability case.

Q. Have there been cigarette firms that have exited the market in the last 40 years?

A. Liggett's all but gone. We have a lot of empty warehouses in Durham, North Carolina, I'm not sure what's left of it. James B. Duke had some brands of cigarettes that I know are gone. I know there've been splitups of corporations. I can't name any major companies in -- certainly in my recent memory that are gone.

Q. Why don't we quit there for the day.

(Deposition adjourned at approximately 5:12 p.m.)

C E R T I F I C A T E

I, Debby J. Campeau, hereby certify that I am qualified as a verbatim shorthand reporter; that I took in stenographic shorthand the testimony of W. KIP VISCUSI, Ph.D., at the time and place aforesaid; and that the foregoing transcript, Volume I, consisting of pages 1 - 258, is a true and correct, full and complete transcription of said shorthand notes, to the best of my ability.

Dated at Lino Lakes, Minnesota, this 17th day of September, 1997.

DEBBY J. CAMPEAU, RPR

Notary Public

S I G N A T U R E P A G E

I, W. KIP VISCUSI, Ph.D., the deponent, hereby certify that I have read the foregoing transcript, Volume I, consisting of pages 1 - 258, and that said transcript is a true and correct, full and complete transcription of my deposition, except per the attached corrections, if any.

(Please check one.)

____ Yes, changes were made per the attached

____ (#) Signature Page Addendums.

____ I have made no changes.

_____

W. KIP VISCUSI, Ph.D.

Sworn and subscribed to before me this day of , 199__.

Notary Public

My commission expires: (DJC)